

SUMMARY REPORT

SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT-2 (LOCATION #1) (DECEMBER 18, 2001 TO JUNE 30, 2002)

**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
JET PROPULSION LABORATORY
PASADENA, CALIFORNIA**

Contract No. N68711-97-D-8702

Delivery Order No. 0048

Prepared for:

**Department of the Navy,
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92132**

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LIST OF ACRONYMS AND ABBREVIATIONS

bgs:	below ground surface
CCl ₄ :	carbon tetrachloride
cfm:	cubic feet per minute
1,1-DCA:	1,1-dichloroethane
1,2-DCA:	1,2-dichloroethane
1,1-DCE:	1,1-dichloroethene
FID:	flame ionization detector
GAC:	granular activated carbon
GEOFON:	GEOFON, Incorporated
JPL:	Jet Propulsion Laboratory
NASA:	National Aeronautics and Space Administration
NPL:	National Priorities List
O&M:	operation and maintenance
OU:	Operable Unit
ppmv:	parts per million by volume
PVC:	polyvinyl chloride
RI/FS:	Remedial Investigation/Feasibility Study
ROI:	radius of influence
SCAQMD:	South Coast Air Quality Management District
SVE:	soil vapor extraction
SWDIV:	Department of the Navy Southwest Division
TCE:	trichloroethene
USEPA:	United States Environmental Protection Agency
VOC:	volatile organic compound

1.0 INTRODUCTION

GEOFON, Inc. (GEOFON) is pleased to submit this Summary Report of a soil vapor extraction (SVE) pilot test conducted for Operable Unit 2 (OU-2) (on-facility vadose zone soil) at the National Aeronautics and Space Administration (NASA), Jet Propulsion Laboratory (JPL), Pasadena, California (Figure 1). This report summarizes SVE pilot test operation from December 18, 2001 to June 30, 2002 at Location #1 of OU-2 (Figure 2). The SVE system at Location #1 is located in the parking lot between Buildings 18 and 79. The purpose of this report is to document SVE pilot test activities and to provide SVE pilot test program results and conclusions. The SVE pilot test operation and maintenance (O&M) was conducted under the Department of the Navy, Southwest Division (SWDIV) Contract No. N68711-97-D-8702, Delivery Order No. 0048.

1.1 Background Information

Based on previous investigations at the JPL site, subsurface soils in OU-2 contain volatile organic compound (VOC) vapors. JPL was placed on the National Priorities List (NPL) in 1992. The Remedial Investigation/Feasibility Study (RI/FS) Work Plan identified the investigative work required to adequately characterize the chemicals in soil. The investigative work identified in the RI/FS Work Plan consisted of installation and sampling of nested soil vapor monitoring wells. The sampling of these wells has indicated the presence of VOC vapors, primarily carbon tetrachloride (CCl_4), Freon 113, and trichloroethene (TCE). These compounds are generally located beneath the north-central portion of the site, and were detected at depths extending to the water table. The groundwater table at JPL ranges up to 200 feet or more below ground surface (bgs). Nonvolatile constituents were not found at concentrations requiring remediation.

A SVE pilot study was initiated at SVE test well VE-01 in April 1998 and conducted through June 1998. Based on the results of the initial pilot study, operation of the SVE system was continued from November 1998 to September 1999, from April 2000 to August 2000, and from January 2001 and May 2001. The SVE system was re-started in December 2001 and continued through June 2002 as part of this extended pilot study of the site. The SVE system is estimated to have removed over 200 pounds of VOCs during the pilot study period.

1.2 SVE System Description

The existing SVE system consists of a single SVE well (VE-01), a skid-mounted extraction vacuum blower (with 20 HP motor), moisture separator (50-gallon knockout tank with sight glass, level switch, and safety interlock to shut down blower for high water level), four granular activated carbon (GAC) vessels (each containing 2,000 pounds of vapor phase GAC) in a series-parallel arrangement, and a dilution air valve, and recirculation air valve to regulate vacuum and

flow. Other accessories include a flow meter for measuring flow, magnehelic gauges and U-tube manometers to measure vacuum and vacuum responses, a field flame ionization detector (FID), and vapor sampling equipment.

SVE well VE-01 is located at Location #1 in the vicinity of soil vapor monitoring wells SVW Nos. 25, 26, 27, and 28. The location of SVE well VE-01 and the soil vapor monitoring wells are shown in Figure 2. SVE well VE-01 consists of three discrete screened intervals (i.e., three separate casings in the same borehole) with a bentonite seal between screens. The screens are designated shallowest to deepest as VE1-A, VE1-B, and VE1-C, respectively. Each casing is constructed of 2-inch diameter Schedule 80 polyvinyl chloride (PVC) pipe, and is screened (0.020 inch slots) from 44 to 84 feet bgs, 94 to 134 feet bgs, and 145 to 185 feet bgs, respectively. Figure 3 shows the construction details for SVE well VE-01.

Organic vapors are removed from the soil by the vacuum blower and then passed through the moisture separator, in-line filter, and air mixing valve before entering the GAC vessels for treatment. The treated air/vapor is discharged to the atmosphere. The maximum flow rate of extracted soil vapor and ambient air combined is 500 cubic feet per minute (cfm). A piping and instrumentation diagram for the SVE system is shown on Figure 4.

2.0 SUMMARY OF OPERATIONS AND TEST RESULTS

The SVE system at Location #1 was restarted on December 18, 2001 for continuous operation through June 2002. During the first three weeks of operation, vapor was extracted from each screened interval separately for a period of one week to measure VOC concentrations at the individual intervals. This data was used to evaluate initial rebound of VOC concentrations in individual screened intervals, calculate mass loading for the individual screened intervals, and to select the optimal operating conditions. The SVE system operated with screened interval VE1-C on-line from December 18 through December 23, 2001. From December 24 through December 30, 2001, the system operated with only screened interval VE1- B on-line, and from December 31, 2001 through January 3, 2002, the system operated with only screened interval VE1-A on-line. Screened interval VE1-A was taken off-line on January 4, 2002 due to the presence of large quantities of water in the influent. From January 4 through January 20, 2002, the SVE system operated with screened interval VE1-B and VE1-C only. On January 21, 2002, screened interval VE1-A was brought back on-line at a reduced vacuum and the SVE system operated with all three screened intervals until the system was shut down at the end of June 2002.

Since the SVE system restarted operation on December 18, 2001, it has yielded an average runtime of approximately 95%. A total of 92 site visits were made during the pilot test duration

for sample collection, operation and maintenance, and system optimization. During the pilot test, the flow rate averaged approximately 450 cfm, as measured by the anemometer (flow meter) at an average applied wellhead vacuum of 50 inches of water.

The following SVE system parameters were recorded manually during each site visit: 1) vacuum induced by the extraction blower, 2) water level in the mist eliminator, 3) vacuum at individual screened interval (VE1-A, VE1-B, and VE1-C), 4) vapor flow rate at each individual screened interval and the influent, 5) FID readings at the influent and effluent, and 6) vacuum responses in soil vapor monitoring wells. The SVE system operating parameters monitoring records are included in Appendix A. A summary of extraction well operating parameters, flow rate, and FID readings are shown in Table 1 and vacuum responses in soil vapor monitoring wells are shown in Table 2.

SVE system influent and effluent (stack) vapor samples were collected in accordance with the South Coast Air Quality Management District (SCAQMD) permit conditions. Each sample was analyzed for VOCs using a FID calibrated to hexane, as required by the SCAQMD.

In addition, the SVE system influent, effluent, and individual screened interval vapor samples were collected every week over the duration of the SVE pilot test for laboratory analyses. The samples were shipped under chain-of-custody via Federal Express to Advanced Technology Laboratories (City of Industry, California) for analysis. The samples were analyzed for VOCs by U.S. Environmental Protection Agency (USEPA) Method TO-14. Laboratory results are presented as Appendix B. A summary of laboratory analytical results is presented in Table 3.

During the pilot test, based on the laboratory analytical results, the SVE system influent VOC concentrations ranged from 0.48 to 1.23 parts per million by volume (ppmv), in response to different applied well vacuums. The influent VOC concentrations initially increased following the SVE pilot test start-up for the first eight weeks, but decreased gradually from the ninth week onward. Effluent VOC concentrations ranged from 0.003 to 0.68 ppmv.

The influent Freon 113, CCl₄, TCE, and PCE concentrations ranged from 0.03 to 0.084 ppmv, 0.153 to 0.676 ppmv, 0.006 to 0.170 ppmv, and 0.01 to 0.045 ppmv, respectively. Figure 5A through Figure 5E are graphs of influent VOC, Freon 113, CCl₄, TCE, and PCE concentrations versus calendar time. These graphs represent the decrease of influent VOC, Freon 113, CCl₄, TCE, and PCE concentrations with respect to time.

The VOC influent and effluent emission rate calculations are shown in Table 4. The emission rates were within the permit requirements set by the SCAQMD. The SVE system achieved greater than 99% destruction efficiencies for CCl₄, TCE and PCE. The influent VOC concentrations were combined with flowrate data to construct graphs of influent cumulative pounds of VOCs removed

from the subsurface per day versus calendar time (Figure 6A).

Similarly, influent Freon 113, CCl₄, TCE, and PCE concentrations were combined with flowrate data to construct a graph of influent cumulative pounds of Freon 113, CCl₄, TCE, and PCE removed from the subsurface per day versus calendar time (Figure 6B through Figure 6E).

3.0 RADIUS OF INFLUENCE

Using the data collected during the SVE pilot test, the maximum radius of influence (ROI), and effective ROI were calculated. The "maximum" ROI is the maximum distance in the soil from the test well that is affected by the vacuum applied to the well (i.e., where the vacuum dissipates to zero). Vacuum responses were observed in the soil vapor monitoring well (SVW-38) as far as 725 feet from the extraction well. The "effective" ROI is the distance from the test well where the vacuum in the soil is equal to a percentage of the vacuum applied to the well (usually assumed to range between 1 and 5 percent). For analysis of this test, a conservative approach was taken, and the effective ROI was calculated at 5% of wellhead vacuum. The average vacuum applied to the test well was 50 inches of water; therefore, the effective ROI would be that distance from the well at which the vacuum in the soil was 2.5 inches of water (0.05×50). Therefore, an effective ROI of 350 feet was assumed based on a 50 percent reduction of VOC level in soil vapors at various distances from the extraction well.

4.0 CONCLUSIONS

The following conclusions are based on the results of the SVE pilot test over a period of six months, laboratory analyses of soil vapor samples, and site conditions at the time of the test:

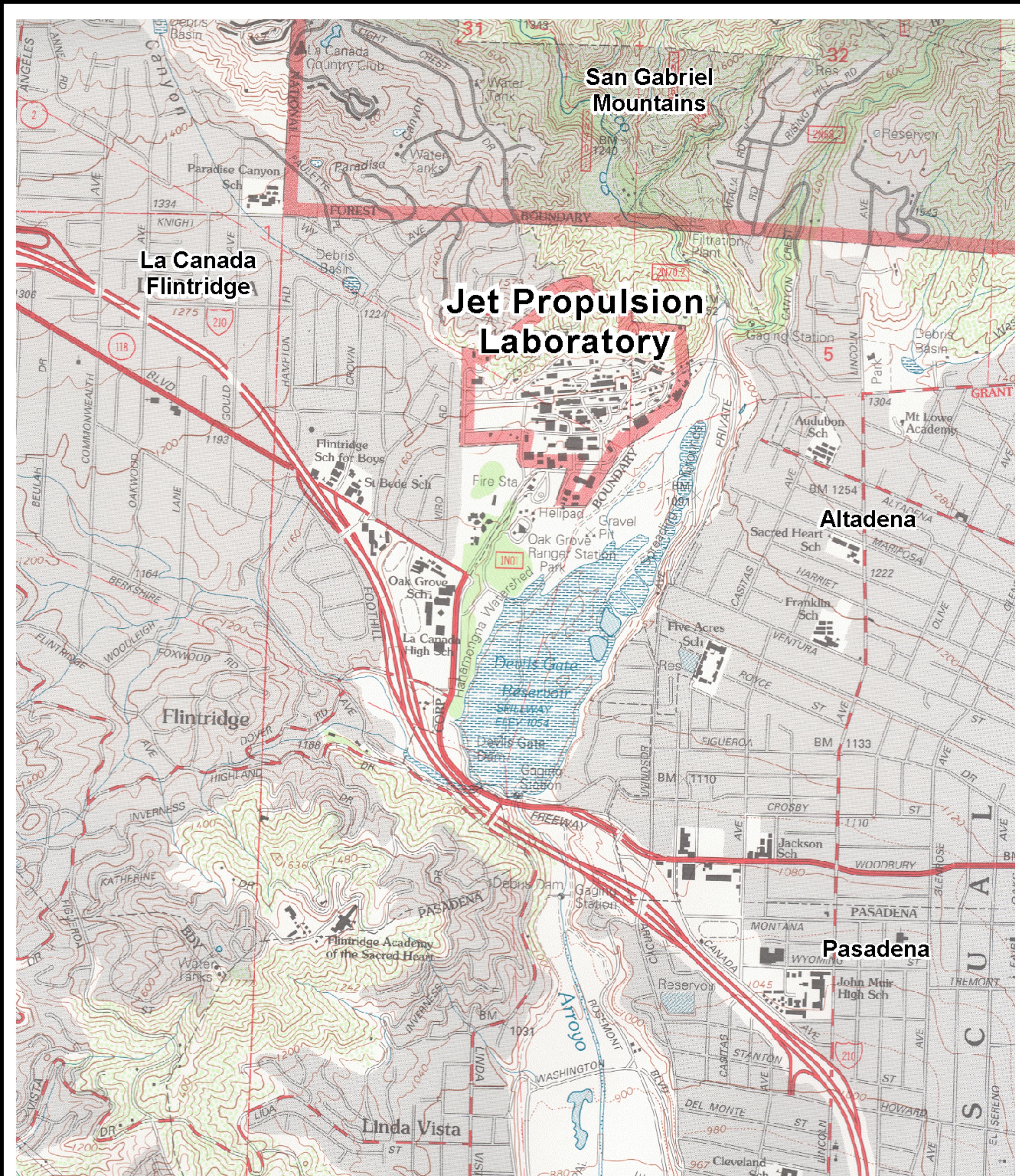
- The combined flow rate from the three screened intervals VE1-A, VE1-B and VE1-C of test well VE-01 averaged approximately 450 CFM at an average vacuum of 50 inches of water.
- The effective ROI was estimated to be 350 feet.
- The VOC concentration levels appeared to have rebounded slightly in screened interval VE1-A immediately after the start-up and have decreased gradually over the duration of the pilot test.
- The influent VOC concentrations initially increased following the SVE pilot test start-up on December 18, 2001, for the first eight weeks, but decreased gradually from the ninth week onward. Laboratory analyses of the collected soil vapor samples indicate the presence of VOCs at very low concentrations (including the primary constituents of concern, Freon 113, CCl₄, and TCE). VOC concentrations in the extracted vapor were reduced by over 80 percent over the duration of the test.

- The SVE system achieved greater than 99% destruction efficiencies for CCl₄, TCE and PCE.
- Since the SVE system was originally re-started on January 8, 2001, approximately 35.91 pounds (cumulative) of VOCs, 6.05 pounds (cumulative) of Freon 113, 25.74 pounds (cumulative) of CCl₄, 9.35 pounds (cumulative) of TCE, and 2.41 pounds (cumulative) of PCE were removed from the subsurface. Over the duration of this phase of the pilot test alone (December 18, 2001 through June 30, 2002), approximately 18.31 pounds (cumulative) of VOCs were removed from the subsurface.
- The SVE system continued to remove substantial mass during this reporting period (December 18, 2001 through June 30, 2002) and asymptotic mass removal conditions have not been reached at well VE-01. Therefore, well VE-01 shall be included in the SVE system rotating (cycling) schedule planned for the three recently installed SVE wells VE-02, VE-03, and VE-04 (i.e., rotation of the single SVE treatment system between each of the four SVE wells). The SVE system will continue to operate, on a rotating basis, at each of the four wells until the performance objectives are met. Treatment of different areas using a rotating approach applies life-cycle design and allows observation of any rebound effects between cycles.

5.0 PROFESSIONAL WARRANTY

Our professional services have been performed using that degree of care and skill ordinarily exercised under similar circumstances by other geologists, hydrogeologists and engineers practicing in this field. No other warranty, expressed or implied, is made as to the professional advice in this report.

FIGURES

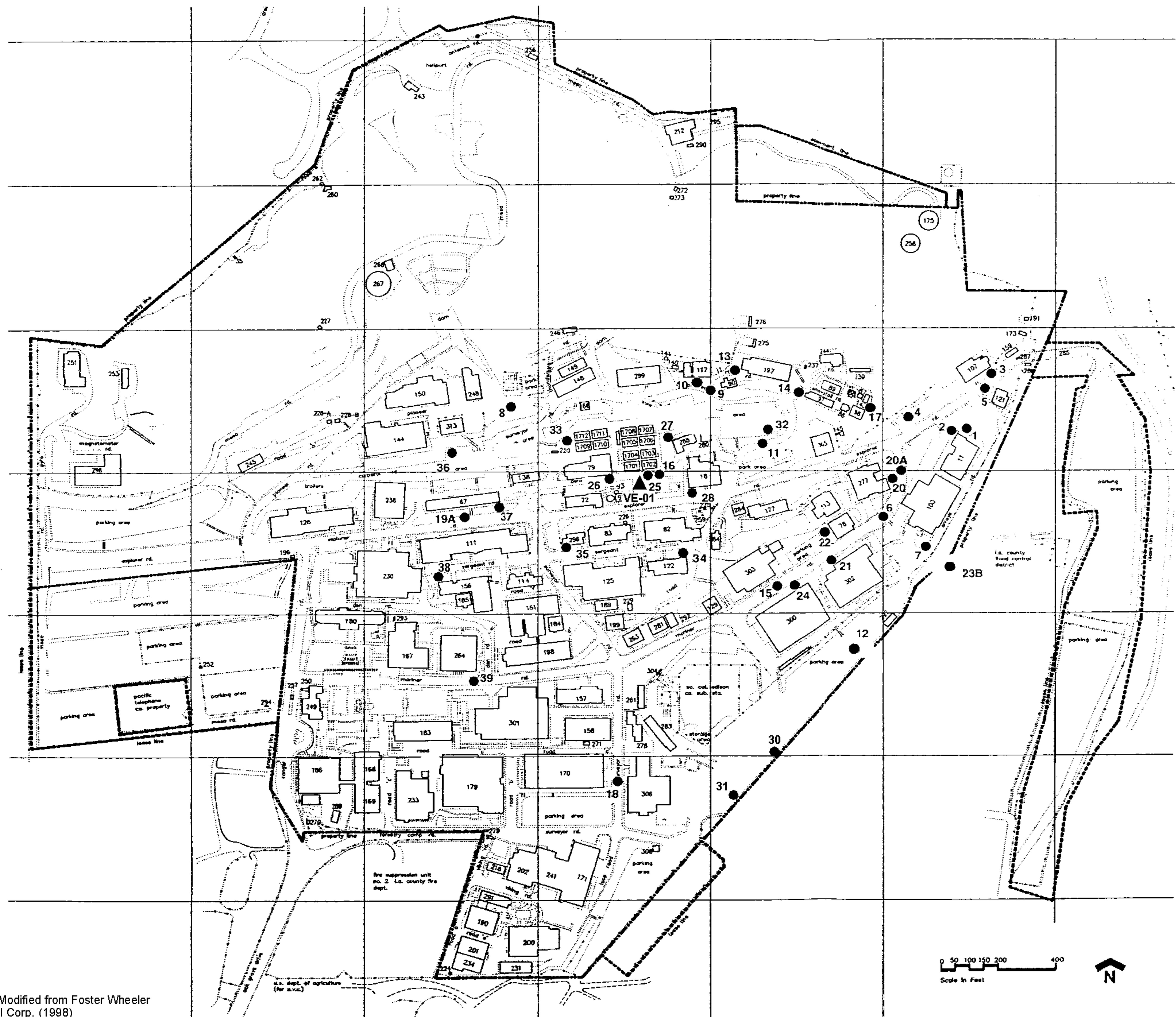


**SITE LOCATION MAP
FIGURE 1**

Jet Propulsion Laboratory
Pasadena, California

GEOFON
INTEGRATION

Date: July 2002
Contract No.: N68711-97-D-8702
DO No.: 0048

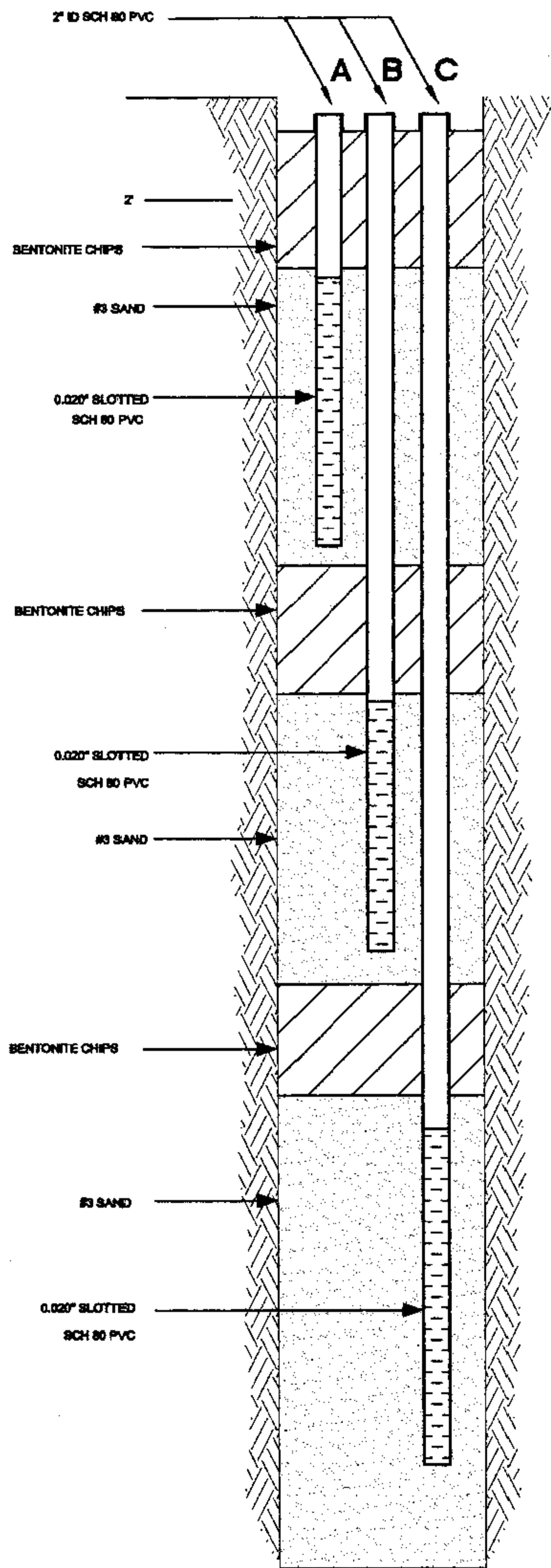


WELL LOCATION MAP FIGURE 2

Jet Propulsion Laboratory
Pasadena, California

Date: July 2002
Contract No.: N68711-97-D-870
DO No.: 0048

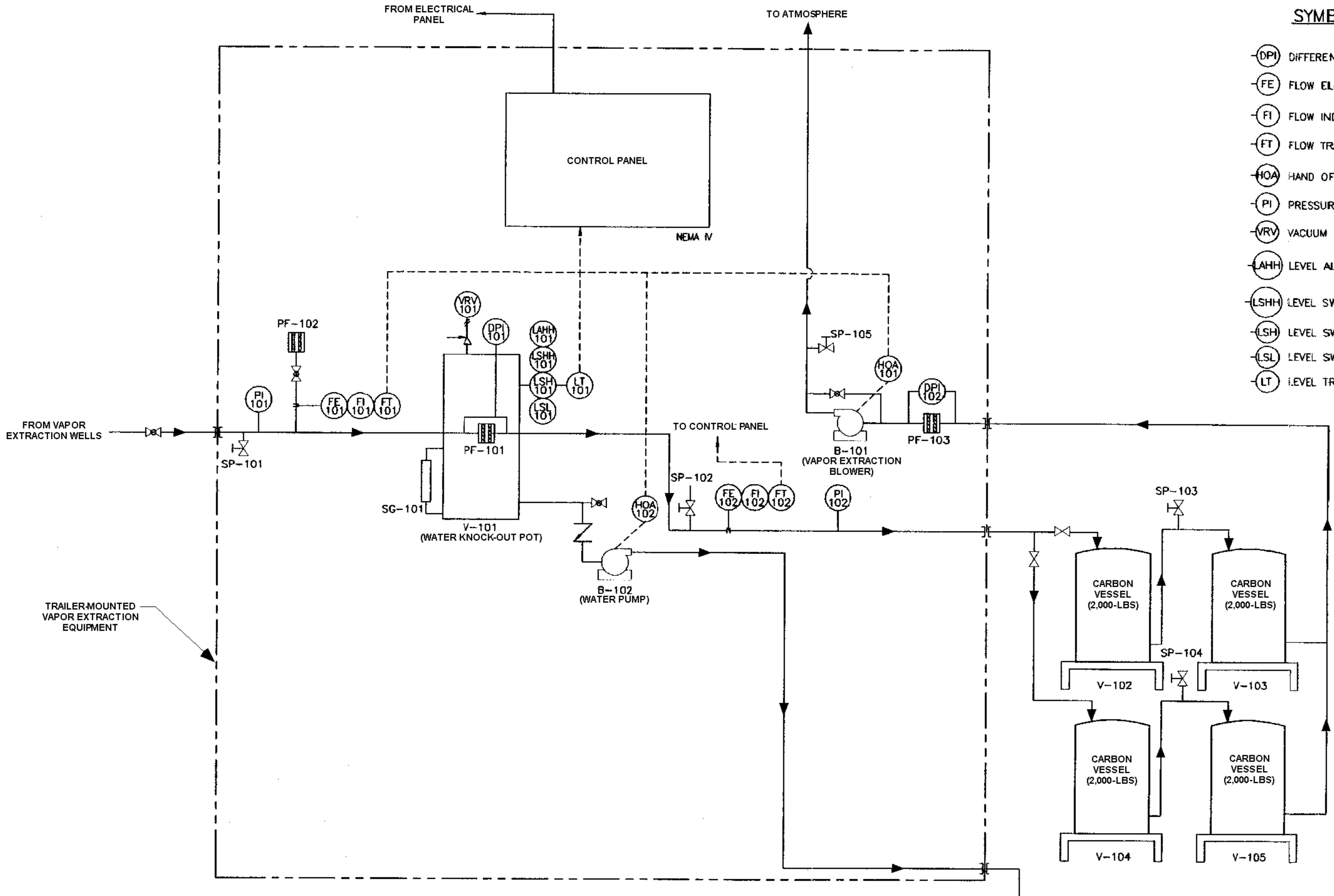
Note: Figure Modified from Foster Wheeler Environmental Corp. (1998)



SCREEN A: 44' TO 84' BGS
SCREEN B: 94' TO 134' BGS
SCREEN C: 145' TO 185' BGS

**WELL CONSTRUCTION DIAGRAM
SVE WELL VE-1
FIGURE 3**

Jet Propulsion Laboratory
Pasadena, California



SYMBOLS AND IDENTIFICATION LETTERS

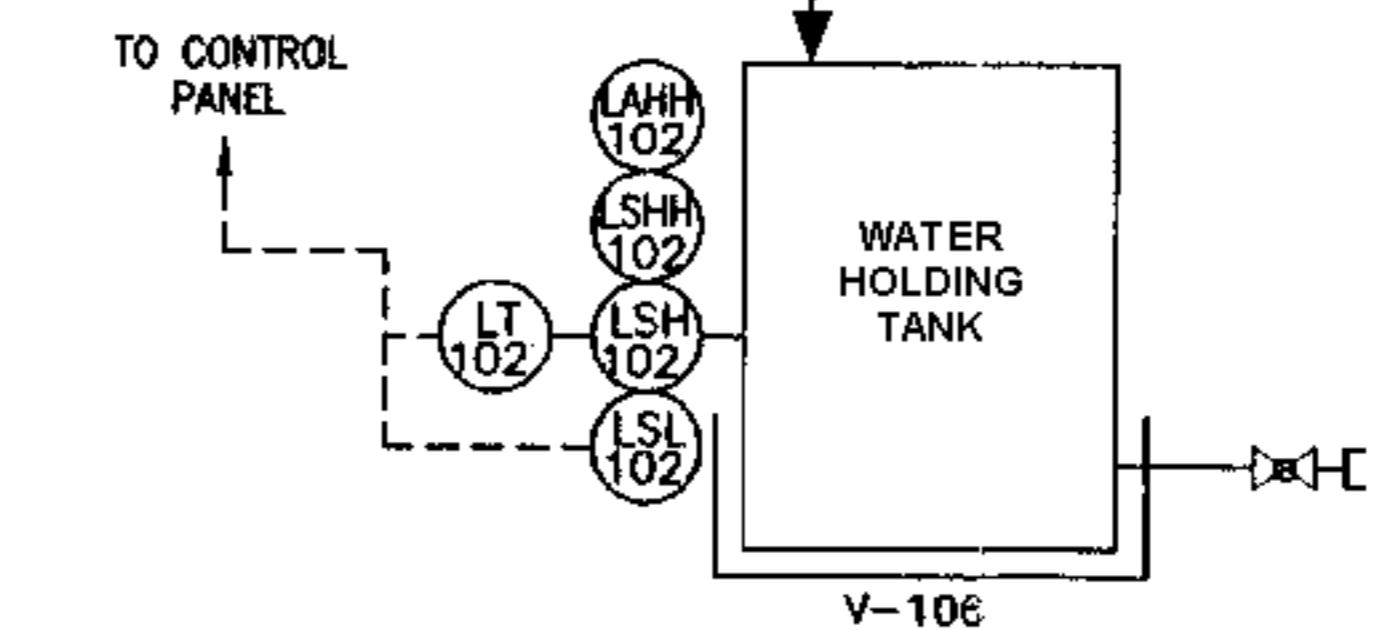
DPI	DIFFERENTIAL PRESSURE INDICATOR	◇	INTERLOCK LOGIC
FE	FLOW ELEMENT	◇	BALL VALVE
FI	FLOW INDICATOR	◇	SAMPLE PORT
FT	FLOW TRANSMITTER	◇	RELIEF VALVE
HOA	HAND OFF AUTOMATIC	—	FLOW LINES (LIQUID/VAPOR)
PI	PRESSURE INDICATOR	—	SIGNAL LINE
VRV	VACUUM RELIEF VALVE	■	PARTICULATE FILTER
LHH	LEVEL ALARM HIGH HIGH	SG	SIGHT GLASS
LSHH	LEVEL SWITCH HIGH HIGH	Z	CHECK VALVE
LSH	LEVEL SWITCH HIGH		
LSL	LEVEL SWITCH LOW		
LT	LEVEL TRANSMITTER		

INSTRUMENTATION

NAME	DESCRIPTION	RANGE
DPI-101	MAGNEHELIC, PRESSURE INDICATOR	0-10 "H ₂ O
DPI-102	MAGNEHELIC PRESSURE INDICATOR	0-10 "H ₂ O
FE, FI, FT-101	PITOT TUBE, INDICATOR, TRANSMITTER	0-600 scfm
FE, FI, FT-102	PITOT TUBE, INDICATOR, TRANSMITTER	0-600 scfm
PI-101	MAGNEHELIC, VACUUM INDICATOR	0-150 "Hg
PI-102	MAGNEHELIC, VACUUM INDICATOR	0-150 "Hg
VRV-101	VACUUM RELIEF	10 "Hg

CONTROLS

1. SHUT DOWN B-101 FOR ALARM HIGHS IN V-101 AND V-106. PROVIDE TWO INDICATING LIGHTS FOR EACH ALARM IN CONTROL PANEL.
2. RECORD FLOWS FROM FT-101, AND 102 ON RECORDER IN CONTROL PANEL.
3. ALL MOTOR STARTERS FOR B-101 AND B-102 SHALL BE INSTALLED IN CONTROL PANEL AND EQUIPPED WITH HOA SWITCHES.
4. LSH-101 TURNS ON PUMP B-102.
5. LSHH-101 SHOULD SHUT DOWN B-101 UNTIL RESOLVED.
6. LSHH-102 SHOULD SHUT DOWN B-101 UNTIL RESOLVED.



SOIL VAPOR EXTRACTION SYSTEM
PIPING AND INSTRUMENTATION DIAGRAM
FIGURE 4

Jet Propulsion Laboratory
Pasadena, California

Figure 5A
Influent VOCs Concentrations

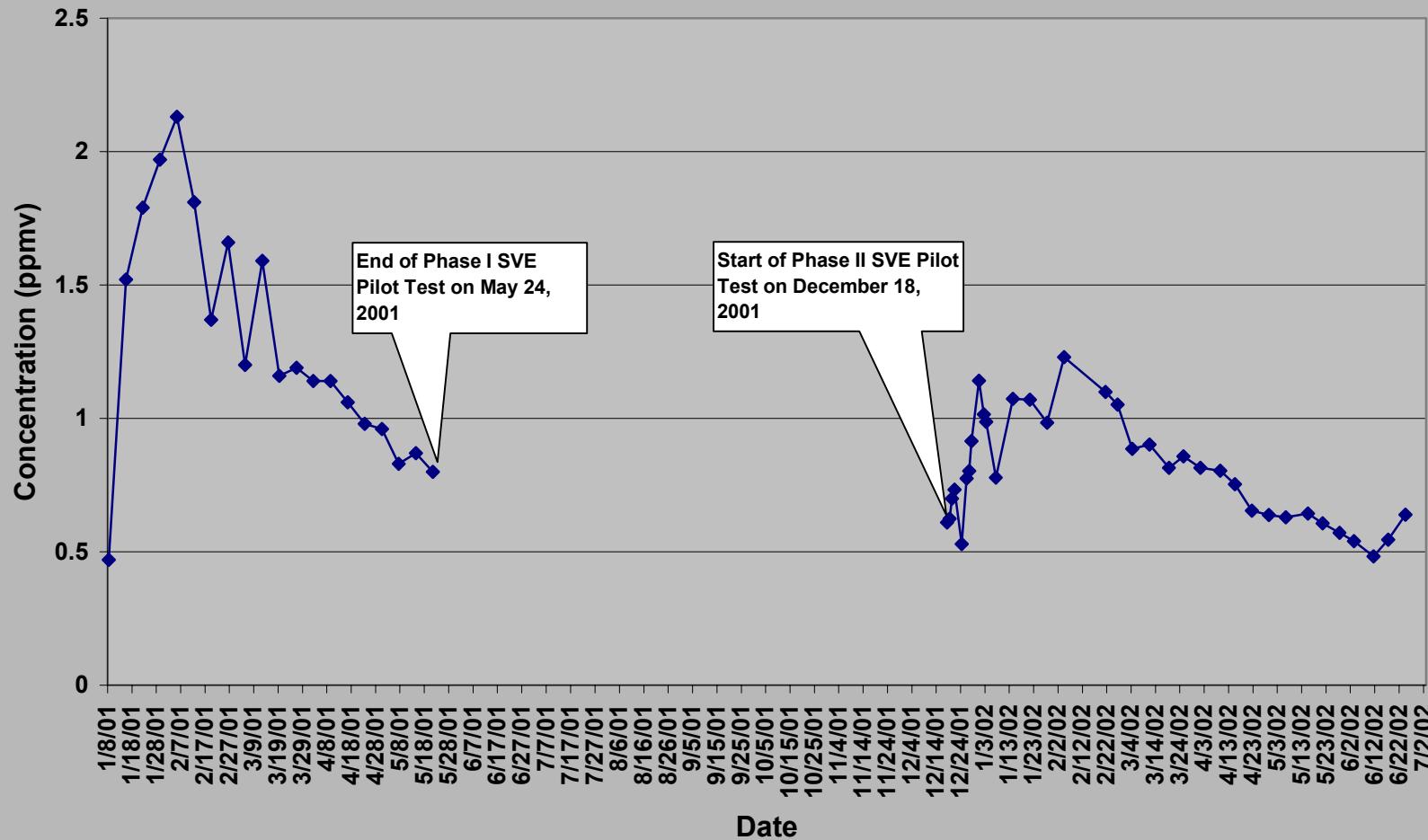


Figure 5B
Influent Freon 113 Concentrations

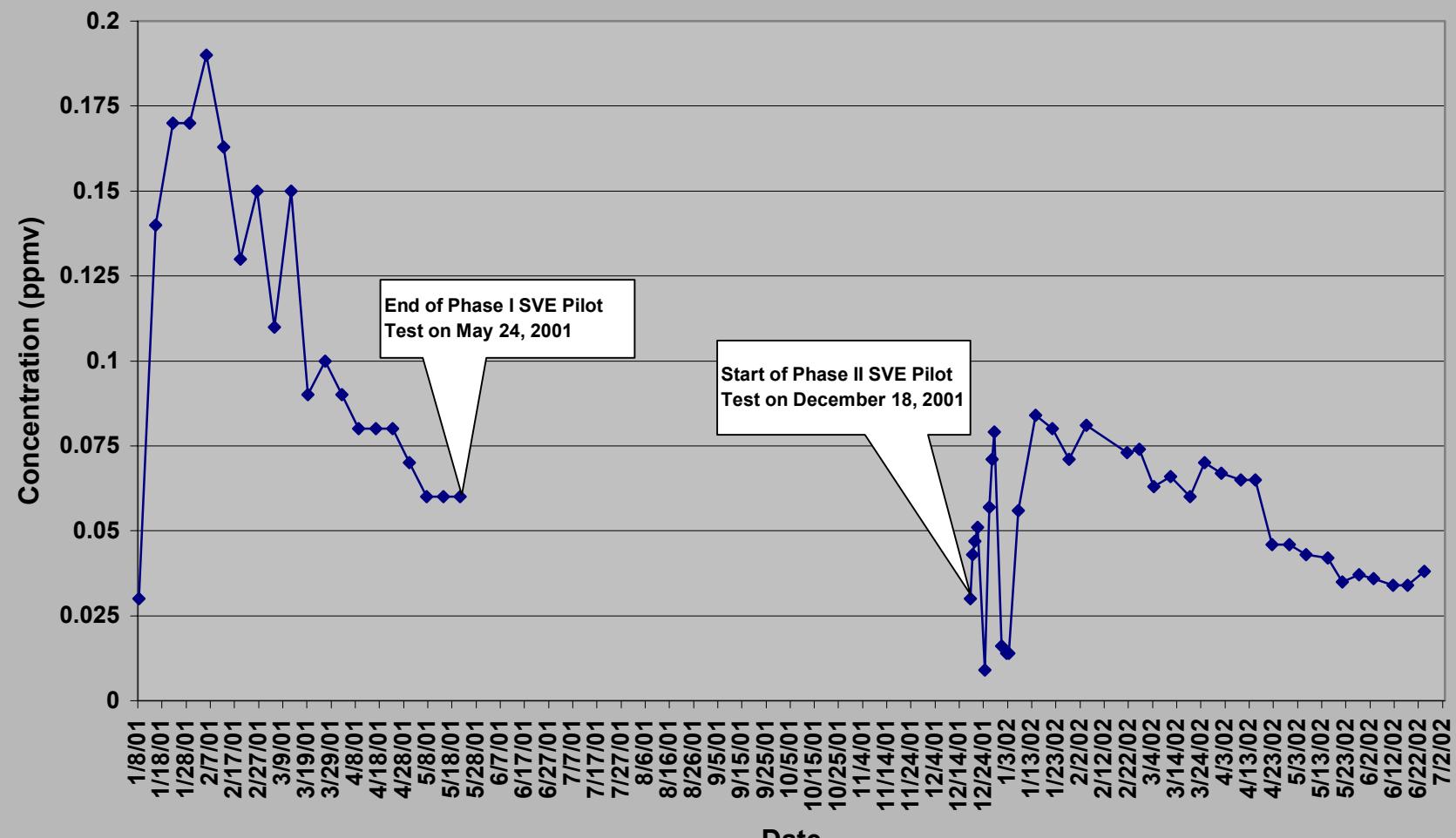


Figure 5C
Influent CCl₄ Concentrations

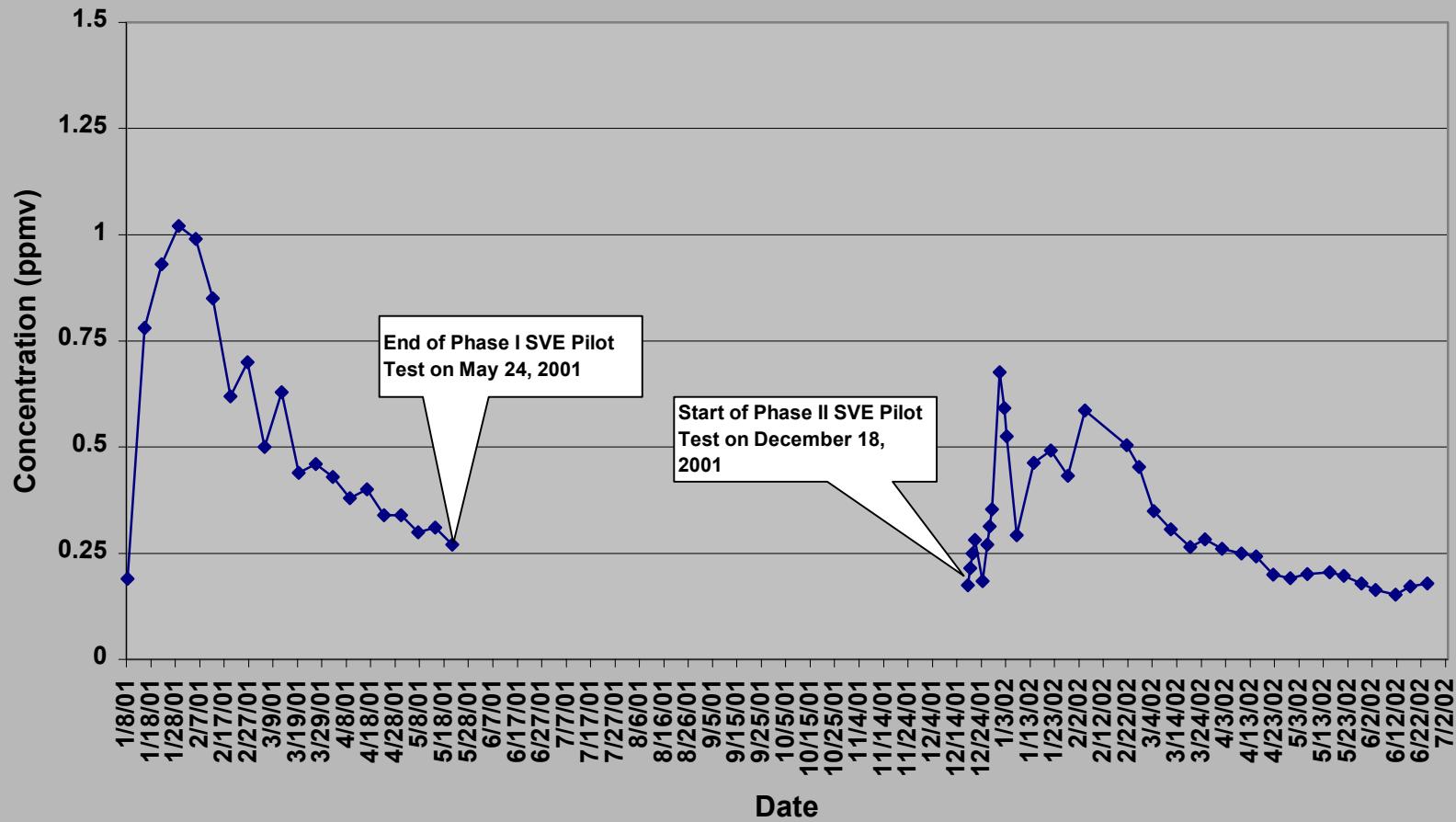


Figure 5D
Influent TCE Concentrations

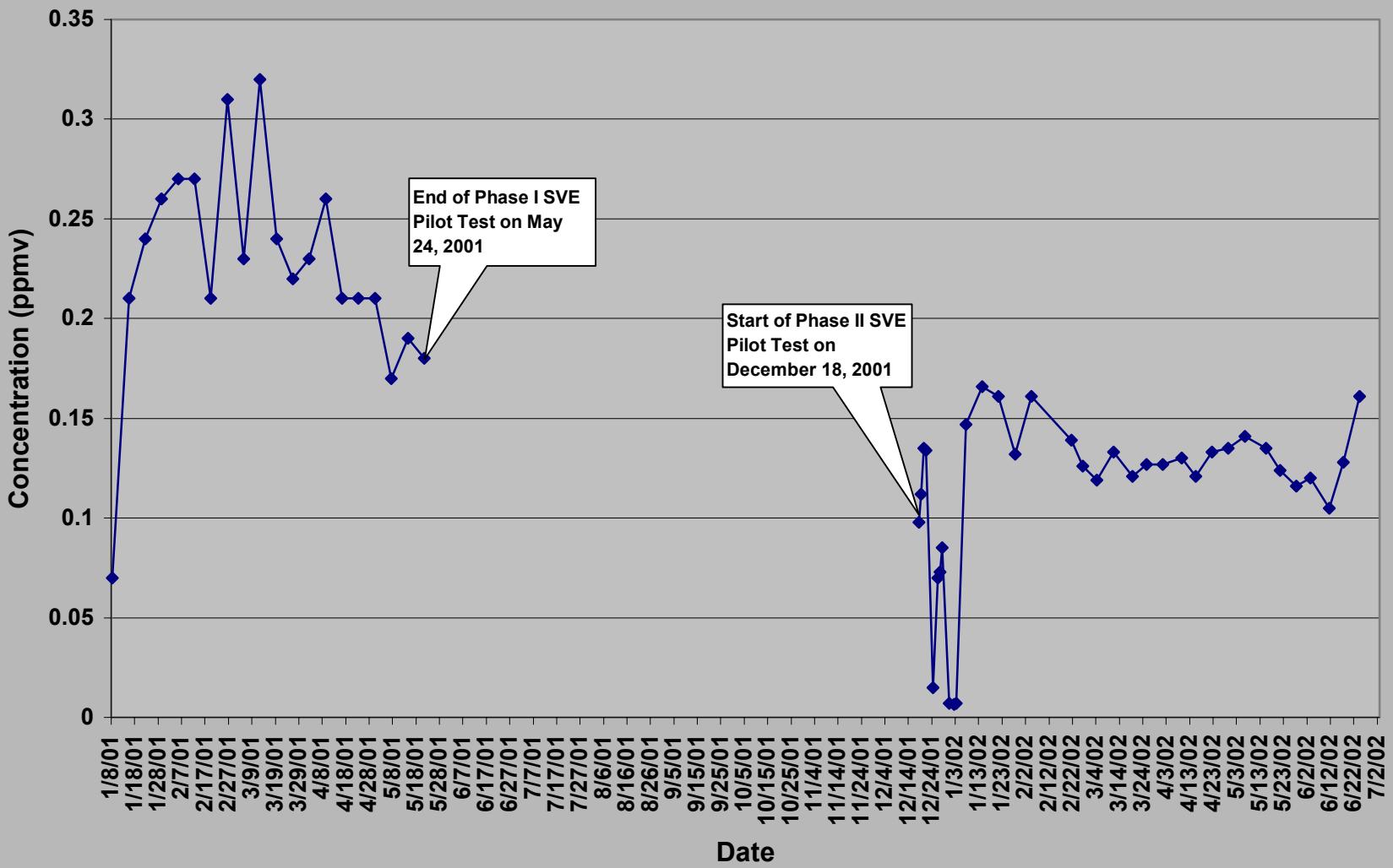


Figure 5E
Influent PCE Concentrations

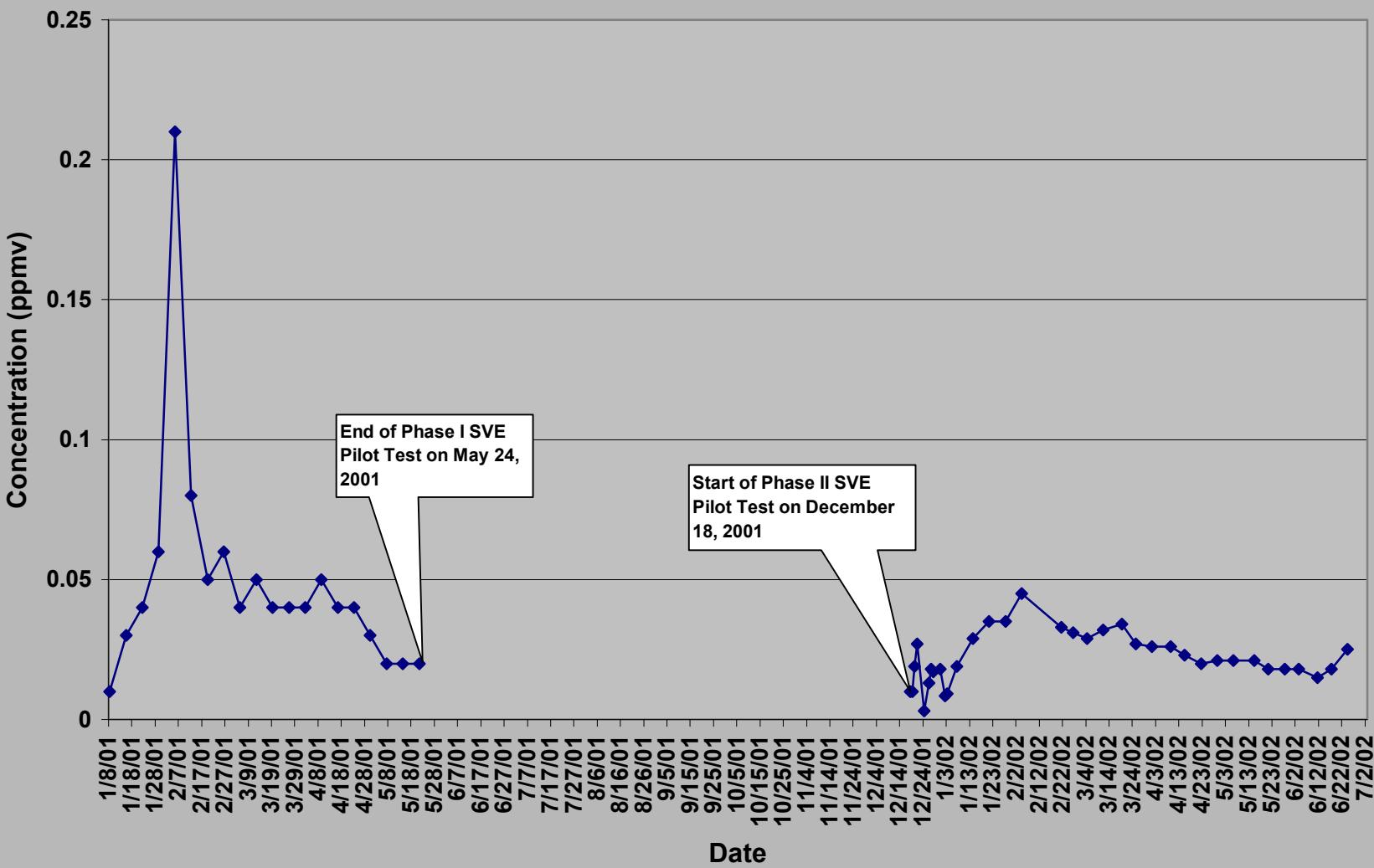


Figure 6A
Influent Cummulative Pounds of VOCs Removed

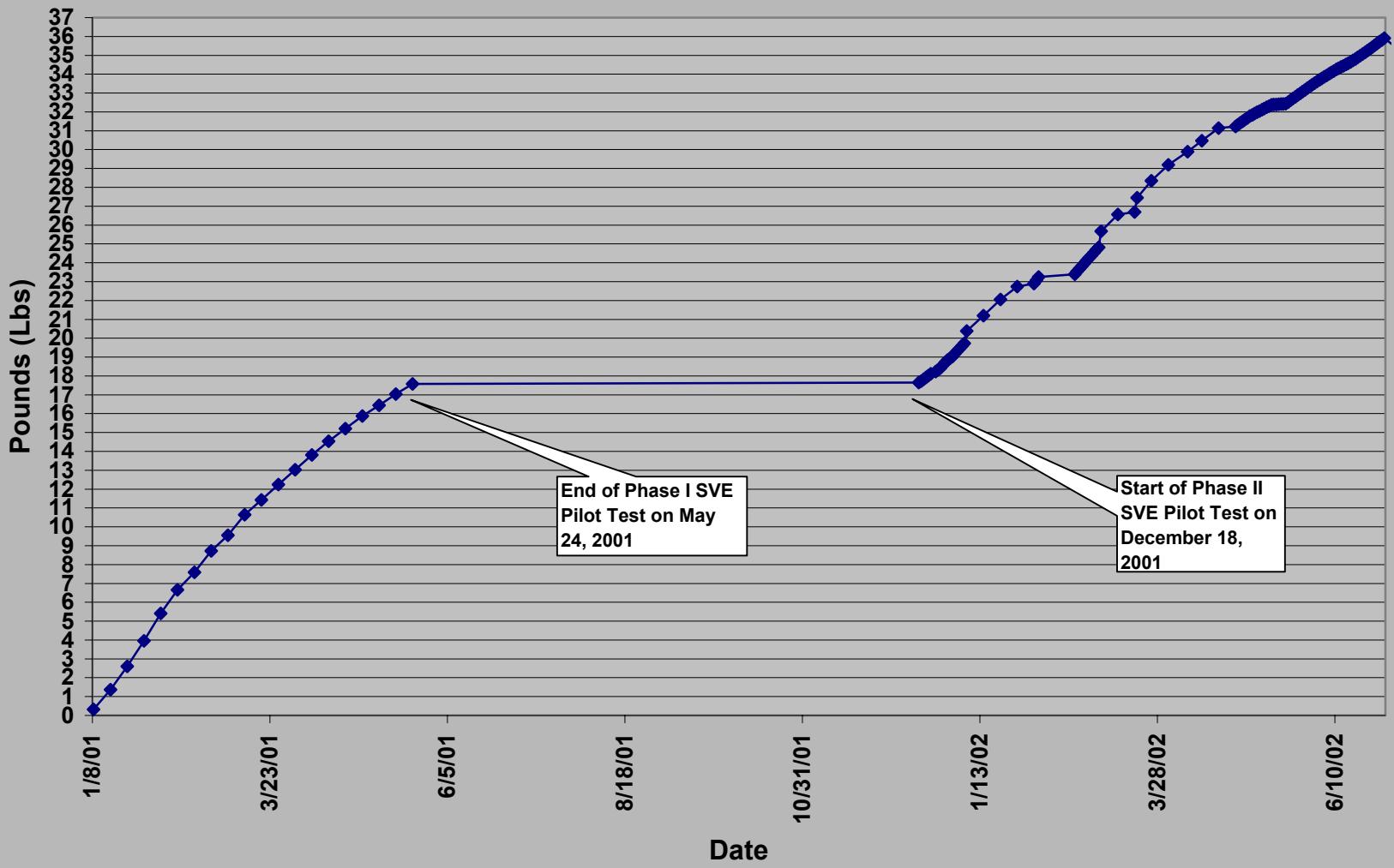


Figure 6B
Influent Cummulative Pounds of Freon 113 Removed

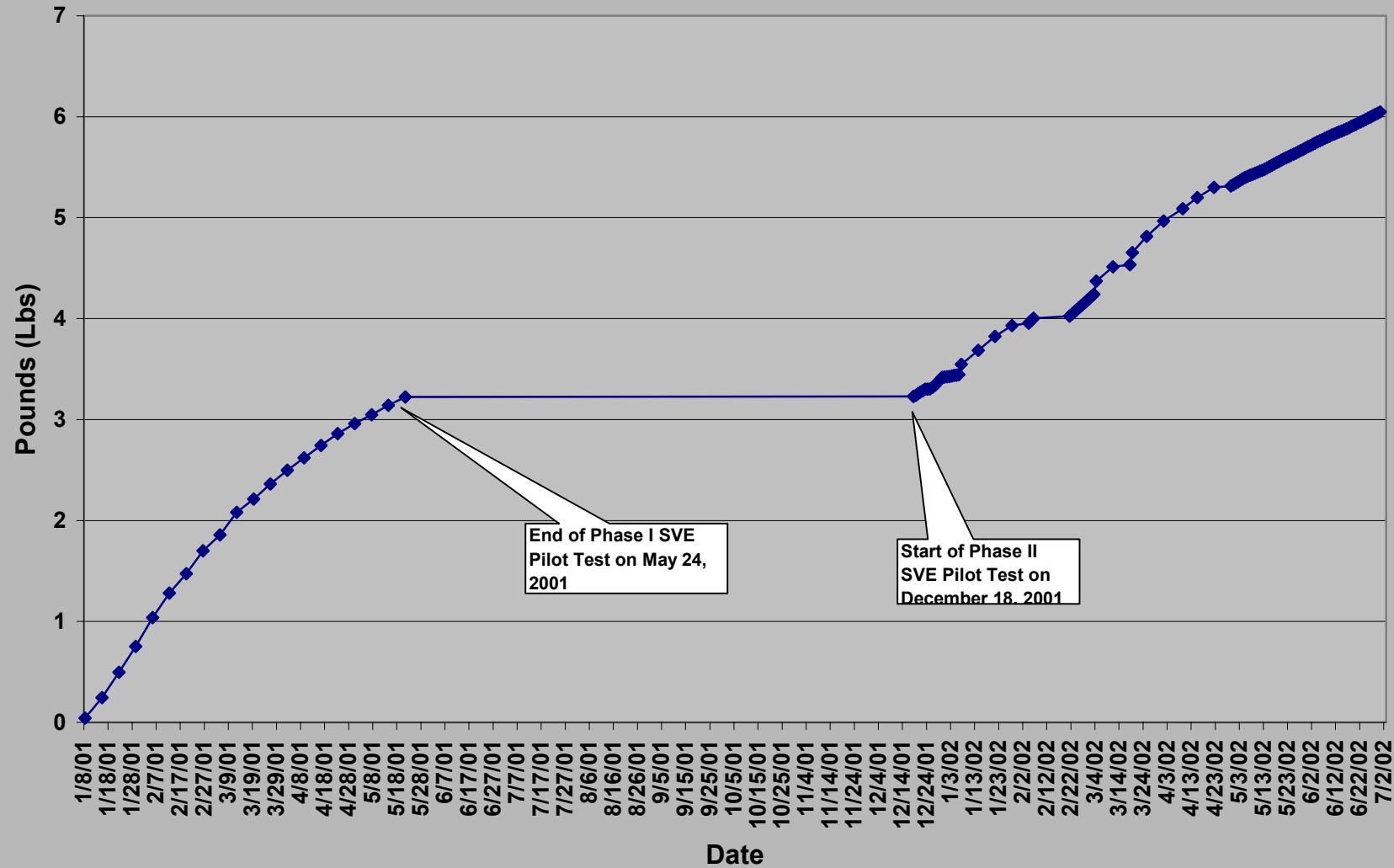


Figure 6C
Influent Cummulative Pounds of CCl4 Removed

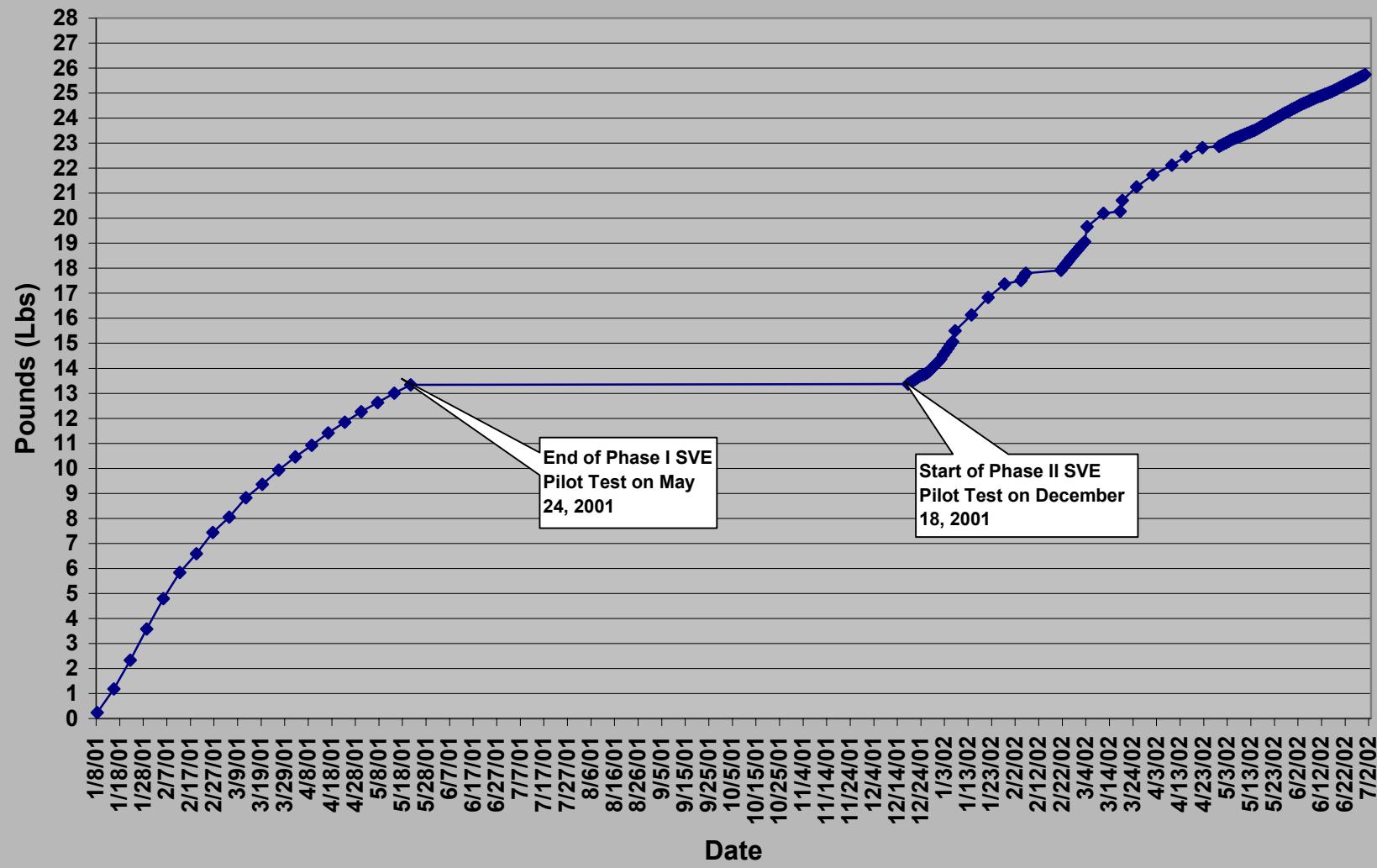


Figure 6D
Influent Cummulative Pounds of TCE Removed

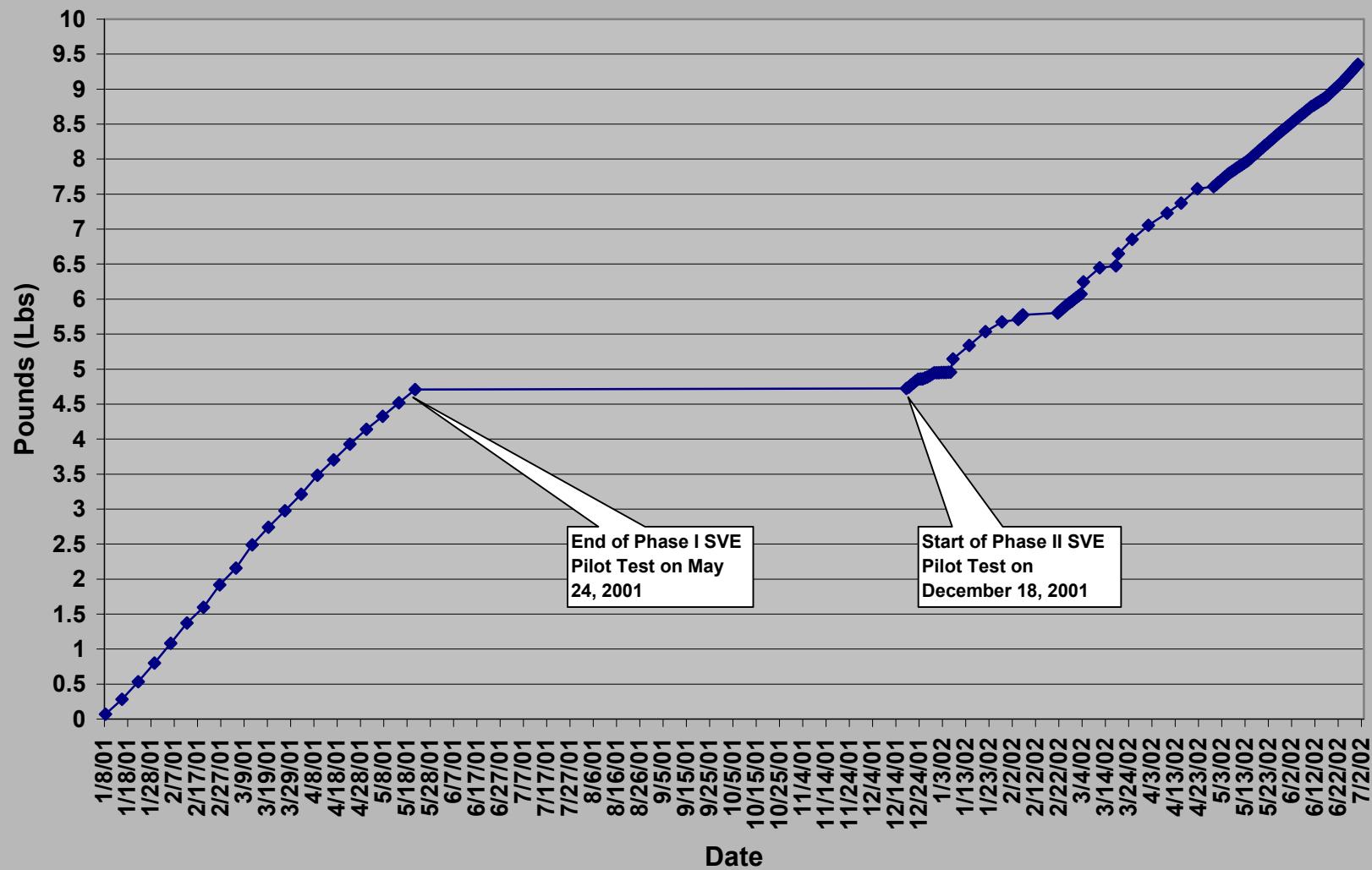
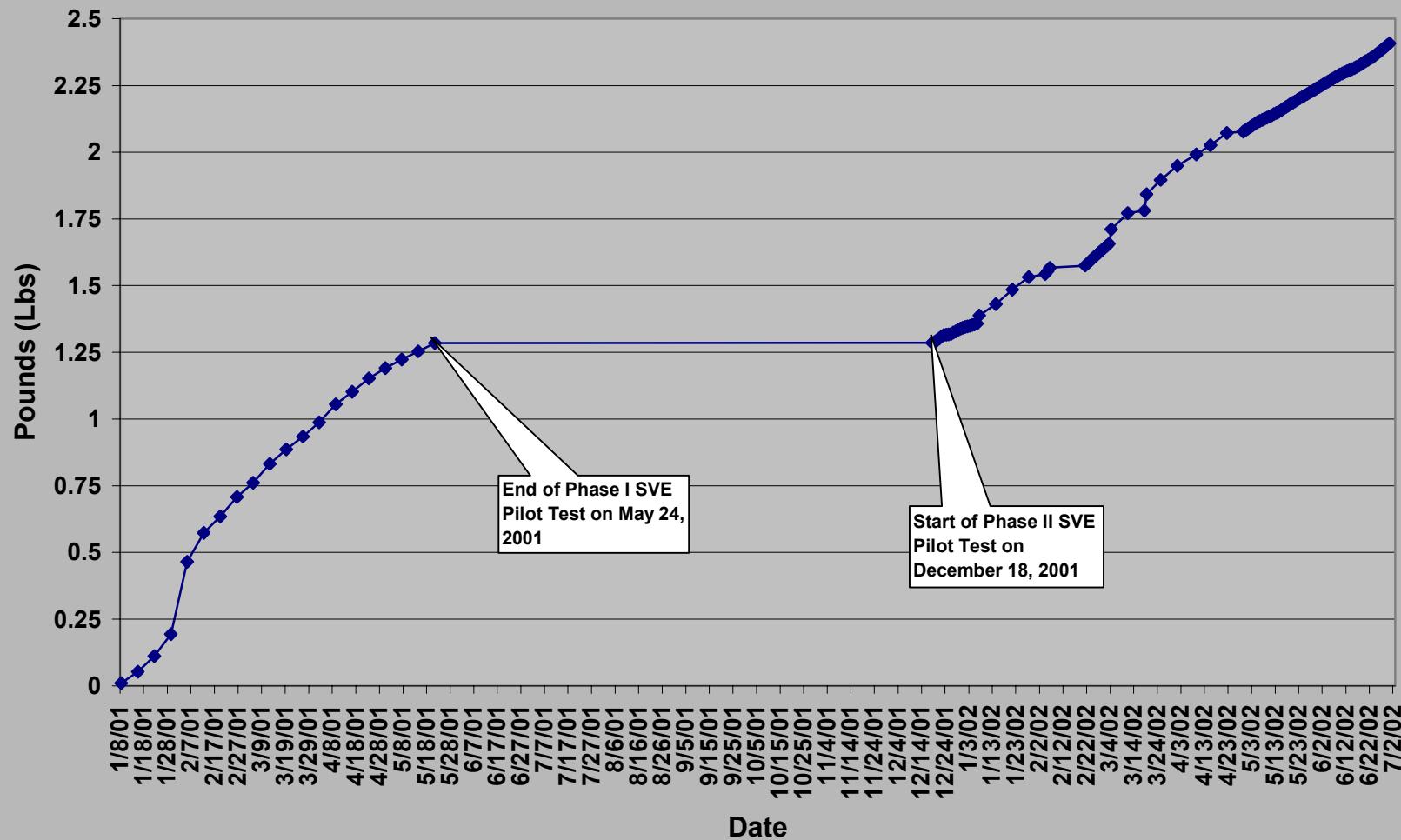


Figure 6E
Influent Cummulative Pounds of PCE Removed



TABLES

**TABLE 1: SYSTEM MONITORING (VACUUM, FLOWRATE AND FID READING) DATA
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA**

WEEK	DATE	TIME <i>hours</i>	WELL SCREEN	VACUUM			FLOWRATE							FID READINGS						
							ANEMOMETER FLOWRATE						ΔP <i>in. H2O</i>	Influent (A) <i>ppm</i>	Influent (B) <i>ppm</i>	Influent (C) <i>ppm</i>	Influent (ABC) <i>ppm</i>	Influent (BC) <i>ppm</i>	Effluent (Total) <i>ppm</i>	
				VE1-A <i>in. H2O</i>	VE1-B <i>in. H2O</i>	VE1-C <i>in. H2O</i>	A <i>cfm</i>	B <i>cfm</i>	C <i>cfm</i>	ABC <i>cfm</i>	BC <i>cfm</i>	Influent <i>cfm</i>	Effluent <i>cfm</i>							
1	12/18/01	0905	C	OFF	OFF	75	OFF	OFF	84	OFF	OFF	336	NA	100						
	12/18/01	1045	C	OFF	OFF	75	OFF	OFF	178	OFF	OFF	711	NA	95	NA	NA	6	NA	NA	4
	12/19/01	0830	C	OFF	OFF	75	OFF	OFF	89	OFF	OFF	356	NA	97						
	12/19/01	1030	C	OFF	OFF	75	OFF	OFF	157	OFF	OFF	630	NA	97	NA	NA	6.5	NA	NA	3.8
	12/20/01	0905	C	OFF	OFF	77	OFF	OFF	145	OFF	OFF	582	NA	100						
	12/20/01	1105	C	OFF	OFF	77	OFF	OFF	118	OFF	OFF	473	NA	100	NA	NA	5.5	NA	NA	4
	12/21/01	1020	C	OFF	OFF	78	OFF	OFF	100	OFF	OFF	399	NA	100						
	12/21/01	1020	C	OFF	OFF	78	OFF	OFF	129	OFF	OFF	516	NA	95	NA	NA	5.5	NA	NA	3.5
2	12/24/01	0825	B	OFF	72	OFF	OFF	84	OFF	OFF	OFF	335	NA	95						
	12/24/01	0925	B	OFF	72	OFF	OFF	135	OFF	OFF	OFF	540	NA	95	NA	4.5	NA	NA	NA	3.2
	12/26/01	0830	B	OFF	72	OFF	OFF	88	OFF	OFF	OFF	352	NA	95						
	12/26/01	1045	B	OFF	72	OFF	OFF	187	OFF	OFF	OFF	748	NA	95	NA	5.5	NA	NA	NA	3.2
	12/27/01	0750	B	OFF	72	OFF	OFF	98	OFF	OFF	OFF	394	NA	95						
	12/27/01	1015	B	OFF	72	OFF	OFF	122	OFF	OFF	OFF	487	NA	95	NA	4.5	NA	NA	NA	3.4
	12/28/01	0855	B	OFF	72	OFF	OFF	117	OFF	OFF	OFF	469	NA	95						
	12/28/01	1100	B	OFF	72	OFF	OFF	157	OFF	OFF	OFF	630	NA	95	NA	5	NA	NA	NA	3.8
3	12/31/01	0835	A	72	OFF	OFF	12	OFF	OFF	OFF	OFF	48	NA	95						
	12/31/01	1015	A	72	OFF	OFF	61	OFF	OFF	OFF	OFF	243	NA	95	5.2	NA	NA	NA	NA	3.5
	1/2/02	9:00	A	74	OFF	OFF	118	OFF	OFF	OFF	OFF	473	NA	100						
	1/2/02	10:35	A	72	OFF	OFF	157	OFF	OFF	OFF	OFF	629	NA	100	5.5	NA	NA	NA	NA	3.8
	1/3/02	12:00	A	72	OFF	OFF	88	OFF	OFF	OFF	OFF	352	NA	100						
	1/3/02	13:00	A	72	OFF	OFF	106	OFF	OFF	OFF	OFF	423	NA	100	5.6	NA	NA	NA	NA	3.5
	1/4/02	11:50	B	OFF	72	OFF	OFF	186	OFF	OFF	OFF	394	NA	95						
	1/4/02	13:15	B	OFF	72	OFF	OFF	122	OFF	OFF	OFF	487	NA	95	NA	4.6	NA	NA	NA	3.1
4	1/7/02	10:05	B&C	OFF	68	67	OFF	180	164	OFF	362	362	NA	90						
	1/7/02	11:20	B&C	OFF	68	68	OFF	294	250	OFF	610	610	NA	95	NA	4.6	8.5	NA	7.5	5.3
	1/8/02	7:50	B&C	OFF	70	70	OFF	113	110	OFF	234	234	NA	90						
	1/8/02	10:25	B&C	OFF	70	70	OFF	210	191	OFF	441	441	NA	95	NA	4.5	5.5	NA	4.8	3.2
	1/9/02	7:00	B&C	OFF	70	70	OFF	104	103	OFF	211	211	NA	90	NA	6.1	5.8	NA	5.5	4
	1/10/02	7:20	B&C	OFF	70	70	OFF	114	104	OFF	205	205	NA	90	NA	6.1	5.6	NA	5.5	3.2
5	1/14/02	9:30	B&C	OFF	70	70	OFF	117	102	OFF	225	225	NA	95						
	1/14/02	11:45	B&C	OFF	70	70	OFF	157	142	OFF	307	307	NA	95	NA	4.8	5.3	NA	5.1	4
	1/15/02	8:30	B&C	OFF	70	70	OFF	112	108	OFF	214	214	NA	90	NA	6.1	4.8	NA	5.5	3.8
	1/16/02	9:00	B&C	OFF	70	70	OFF	105	98	OFF	208	208	NA	95						
	1/16/02	11:45	B&C	OFF	70	70	OFF	166	146	OFF	319	319	NA	95	NA	4.5	4.3	NA	5.2	3.5
	1/17/02	9:45	B&C	OFF	70	70	OFF	160	141	OFF	285	285	NA	95						
	1/17/02	11:30	B&C	OFF	70	70	OFF	192	170	OFF	374	374	NA	95	NA	5	5.3	NA	5.5	4.2

**TABLE 1: SYSTEM MONITORING (VACUUM, FLOWRATE AND FID READING) DATA
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA**

WEEK	DATE	TIME <i>hours</i>	WELL SCREEN	VACUUM			FLOWRATE							FID READINGS						
							ANEMOMETER FLOWRATE						ΔP <i>in. H2O</i>	Influent (A) <i>ppm</i>	Influent (B) <i>ppm</i>	Influent (C) <i>ppm</i>	Influent (ABC) <i>ppm</i>	Influent (BC) <i>ppm</i>	Effluent (Total) <i>ppm</i>	
				VE1-A <i>in. H2O</i>	VE1-B <i>in. H2O</i>	VE1-C <i>in. H2O</i>	A <i>cfm</i>	B <i>cfm</i>	C <i>cfm</i>	ABC <i>cfm</i>	BC <i>cfm</i>	Influent <i>cfm</i>	Effluent <i>cfm</i>							
6	1/21/02	9:15	ABC	46	44	45	327	69	67	356	OFF	356	NA	70						
	1/21/02	11:30	B&C	OFF	68	68	OFF	145	154	OFF	345	345	NA	90	NA	6.2	5.5	NA	5.1	3.7
	1/22/02	7:15	B&C	OFF	68	68	OFF	97	88	OFF	206	206	NA	95						
	1/22/02	14:15	ABC	8	62	60	43	148	137	306	OFF	306	NA	85	NA	NA	NA	NA	NA	NA
	1/23/02	7:45	ABC	8	62	62	31	83	81	208	OFF	208	NA	85						
	1/23/02	10:15	ABC	8	62	62	48	149	139	307	OFF	307	NA	85	4.3	5.6	6.1	5.8	NA	3.2
	1/24/02	9:05	ABC	8	62	62	38	106	104	243	OFF	243	NA	85						
	1/24/02	11:00	ABC	8	62	62	48	172	161	416	OFF	416	NA	85	5.1	6.3	5	4.8	NA	4
7	1/28/02	8:20	ABC	8	62	62	35	84	80	208	OFF	208	NA	85						
	1/28/02	10:30	ABC	8	62	62	40	115	113	249	OFF	249	NA	85	4.5	4.8	3.8	4.5	NA	3.5
	1/29/02	7:45	ABC	8	62	62	28	73	68	193	OFF	193	NA	85						
	1/29/02	10:30	ABC	8	62	62	43	141	124	285	OFF	285	NA	85	3.5	4.2	4.5	3.8	NA	2.8
	1/30/02	8:00	ABC	8	62	62	40	80	70	185	OFF	185	NA	95						
	1/30/02	10:30	B&C	OFF	68	68	OFF	147	134	OFF	290	290	NA	95	NA	4.2	3.5	NA	3.5	2.7
	1/31/02	9:15	B&C	OFF	70	70	OFF	127	117	OFF	257	257	NA	95						
	1/31/02	11:30	B&C	OFF	70	70	OFF	164	152	OFF	321	321	NA	95	NA	5	4.3	NA	4.5	3.6
8	2/4/02	9:00	ABC	10	60	60	41	122	119	299	OFF	299	NA	85						
	2/4/02	11:50	ABC	10	56	55	69	193	186	424	OFF	424	NA	85	3.6	5.1	4.8	5	NA	3.2
	2/5/02	8:30	ABC	10	58	58	29	93	95	260	OFF	260	NA	85						
	2/5/02	10:50	ABC	10	58	58	70	188	178	409	OFF	409	NA	85	7.1	5	4.3	4.5	NA	3.5
	2/6/02	9:00	ABC	10	58	58	31	95	96	259	OFF	259	NA	85						
	2/6/02	11:10	ABC	10	58	58	73	199	184	420	OFF	420	NA	85	5.2	3.5	4.6	5	NA	3.7
10	2/21/02	9:30	ABC	8	60	60	39	152	132	345	OFF	345	NA	85						
	2/21/02	11:30	ABC	8	18	22	112	152	168	429	OFF	429	NA	85	NA	NA	NA	NA	NA	
11	2/26/02	8:15	ABC	12	28	28	51	80	95	240	OFF	240	NA	120						
	2/26/02	11:15	ABC	12	26	34	116	154	191	415	OFF	415	NA	105	4.1	4	4.2	3.8	NA	3
	2/27/02	8:00	ABC	10	24	30	49	77	93	223	OFF	223	NA	95						
	2/27/02	11:00	ABC	10	24	30	104	140	159	398	OFF	398	NA	95	4.3	4.8	5.1	4.6	NA	3.1
	2/28/02	10:00	ABC	12	50	50	53	107	102	278	OFF	278	NA	75						
	2/28/02	12:00	ABC	12	50	50	91	184	171	417	OFF	417	NA	75	4.3	3.6	5.2	5	NA	3.3
12	3/4/02	9:30	ABC	18	48	48	62	106	102	299	OFF	299	NA	75						
	3/4/02	11:15	ABC	18	48	48	154	223	199	478	OFF	478	NA	75	3.5	3.8	4	3.8	NA	3
	3/5/02	8:15	ABC	18	48	48	55	89	93	258	OFF	258	NA	75						
	3/5/02	11:10	ABC	18	48	48	118	171	161	447	OFF	447	NA	75	5.6	4.5	5.2	4	NA	3
	3/6/02	8:50	ABC	18	48	48	60	99	95	277	OFF	277	NA	75						
	3/6/02	11:20	ABC	18	48	48	112	165	159	400	OFF	400	NA	75	4.8	5.1	4.6	4.5	NA	3.1
	3/7/02	8:30	ABC	18	48	48	64	107	99	275	OFF	275	NA	73						
	3/7/02	10:30	ABC	18	48	48	77	129	119	340	OFF	340	NA	73	5.6	5.1	4.2	4.8	NA	3.5

**TABLE 1: SYSTEM MONITORING (VACUUM, FLOWRATE AND FID READING) DATA
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA**

WEEK	DATE	TIME <i>hours</i>	WELL SCREEN	VACUUM			FLOWRATE							FID READINGS						
							ANEMOMETER FLOWRATE						ΔP <i>in. H2O</i>	Influent (A) <i>ppm</i>	Influent (B) <i>ppm</i>	Influent (C) <i>ppm</i>	Influent (ABC) <i>ppm</i>	Influent (BC) <i>ppm</i>	Effluent (Total) <i>ppm</i>	
				VE1-A <i>in. H2O</i>	VE1-B <i>in. H2O</i>	VE1-C <i>in. H2O</i>	A <i>cfm</i>	B <i>cfm</i>	C <i>cfm</i>	ABC <i>cfm</i>	BC <i>cfm</i>	Influent <i>cfm</i>	Effluent <i>cfm</i>							
13	3/11/02	8:30	ABC	18	48	48	64	108	102	298	OFF	298	NA	75						
	3/11/02	11:15	ABC	16	46	46	133	213	193	477	OFF	477	NA	75	6	8.5	6.5	4.7	NA	3.2
	3/12/02	8:20	ABC	18	48	48	66	112	107	294	OFF	294	NA	73						
	3/12/02	11:15	ABC	16	46	46	129	186	181	474	OFF	474	NA	73	6	7.5	5.5	4.5	NA	3
	3/13/02	9:10	ABC	18	48	48	100	151	132	352	OFF	352	NA	73						
	3/13/02	11:15	ABC	16	46	46	126	196	194	485	OFF	485	NA	73	5.2	6.5	5.5	4.8	NA	3.1
	3/14/02	8:30	ABC	18	48	48	57	95	90	244	OFF	244	NA	73						
	3/14/02	11:30	ABC	16	46	46	80	127	120	292	OFF	292	NA	73	5.5	6.2	4.8	5	NA	3
14	3/19/02	8:15	ABC	18	48	48	47	89	85	238	OFF	238	NA	70						
	3/19/02	11:45	ABC	16	46	46	154	218	213	473	OFF	473	NA	70	5	4.6	5.6	4.5	NA	3.8
	3/20/02	9:15	ABC	18	48	48	61	107	99	302	OFF	302	NA	70						
	3/20/02	11:45	ABC	16	46	46	136	216	217	478	OFF	478	NA	70	5.5	8.8	8	5	NA	3.5
	3/21/02	8:25	ABC	18	48	48	64	109	108	326	OFF	326	NA	70						
	3/21/02	10:30	ABC	16	44	48	141	208	202	476	OFF	476	NA	70	7.5	8.2	5.5	5.2	NA	3.2
15	3/25/02	8:30	ABC	18	44	48	59	97	97	249	OFF	249	NA	70						
	3/25/02	11:30	ABC	16	44	46	117	171	160	447	OFF	447	NA	70	7.2	6	6.3	5.5	NA	3.5
	3/26/02	8:05	ABC	18	44	48	62	99	95	285	OFF	285	NA	70						
	3/26/02	11:30	ABC	16	42	46	135	206	202	478	OFF	478	NA	70	5.5	6.5	5.2	5	NA	3.3
	3/27/02	8:05	ABC	18	46	48	56	85	84	237	OFF	237	NA	70						
	3/27/02	11:30	ABC	16	44	47	119	188	184	464	OFF	464	NA	70	4.8	4.5	4.2	4	NA	3.2
	3/28/02	8:00	ABC	18	44	48	61	93	95	256	OFF	256	NA	70						
16	3/28/02	10:30	ABC	16	43	47	68	103	101	285	OFF	285	NA	70	5	6.1	4.3	4.8	NA	2.8
	4/1/02	8:20	ABC	18	44	48	60	95	94	240	OFF	240	NA	70						
	4/1/02	10:20	ABC	17	43	47	104	163	154	397	OFF	397	NA	70	4.1	5	5.7	4.5	NA	3.3
	4/2/02	8:30	ABC	18	44	48	63	99	99	264	OFF	264	NA	70						
	4/2/02	11:00	ABC	17	43	47	104	168	164	435	OFF	435	NA	70	4.5	6	4.2	4.5	NA	2.7
	4/3/02	8:10	ABC	18	44	48	64	89	89	238	OFF	238	NA	70						
	4/3/02	11:00	ABC	17	43	47	89	133	138	371	OFF	371	NA	70	4.2	5.5	3.8	3.5	NA	2.5
	4/4/02	9:30	ABC	18	44	48	81	123	121	316	OFF	316	NA	70						
17	4/4/02	11:00	ABC	18	44	48	102	152	146	380	OFF	380	NA	70	5.2	5.6	5	4.3	NA	3.2
	4/9/02	7:55	ABC	18	45	50	53	81	81	228	OFF	228	NA	70						
	4/9/02	10:50	ABC	18	45	50	117	177	173	485	OFF	485	NA	70	2.5	4.2	4	3.8	NA	1.2
	4/10/02	8:00	ABC	18	45	50	62	96	95	263	OFF	263	NA	70						
	4/10/02	10:15	ABC	17	44	49	106	170	157	450	OFF	450	NA	70	3.2	3.8	3.5	2.9	NA	0.6
	4/11/02	7:55	ABC	18	44	50	102	138	132	336	OFF	336	NA	70						
	4/11/02	11:00	ABC	17	43	49	119	185	179	464	OFF	464	NA	70	6.7	5.1	6.2	4.8	NA	1.3
	4/12/02	7:40	ABC	17	44	49	75	105	103	275	OFF	275	NA	70						
18	4/12/02	9:50	ABC	17	44	49	86	124	123	344	OFF	344	NA	70	4.1	5	6.2	4.5	NA	2.2
	4/15/02	9:15	ABC	16	42	48	80	114	113	285	OFF	285	NA	70						
	4/15/02	11:20	ABC	17	43	49	68	103	104	276	OFF	276	NA	70	3.2	3.5	3.8	3	NA	2.4
	4/16/02	8:00	ABC	17	45	50	56	88	89	249	OFF	249	NA	70						
	4/16/02	11:00	ABC	17	45	50	74	102	98	289	OFF	289	NA	70	4.2	3.6	5.1	5	NA	3
	4/17/02	8:10	ABC	17	44	50	93	132	127	336	OFF	336	NA	70						
	4/17/02	11:00	ABC	17	45	50	89	135	132	359	OFF	359	NA	70	4.5	5	4.2	3.5	NA	2.5
	4/18/02	9:15	ABC	17	45	50	78	129	117	307	OFF	307	NA	70						
	4/18/02	11:10	ABC	17	45	50	97	143	138	406	OFF	406	NA	70	4.8	5.5	4.5	3.5	NA	2.6

**TABLE 1: SYSTEM MONITORING (VACUUM, FLOWRATE AND FID READING) DATA
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA**

WEEK	DATE	TIME hours	WELL SCREEN	VACUUM			FLOWRATE							FID READINGS						
							ANEMOMETER FLOWRATE						△P in. H2O	Influent (A) ppm	Influent (B) ppm	Influent (C) ppm	Influent (ABC) ppm	Influent (BC) ppm	Effluent (Total) ppm	
				VE1-A in. H2O	VE1-B in. H2O	VE1-C in. H2O	A cfm	B cfm	C cfm	ABC cfm	BC cfm	Influent cfm								
19	4/22/02	8:30	ABC	17	46	50	71	112	114	307	OFF	307	NA	70						
	4/22/02	11:20	ABC	17	45	50	146	215	213	488	OFF	488	NA	70	5.1	4.8	4.4	4	NA	2.6
	4/23/02	8:05	ABC	17	46	50	75	114	112	299	OFF	299	NA	70						
	4/23/02	11:30	ABC	17	45	45	165	249	226	494	OFF	494	NA	70	5.8	7.5	5.5	4.5	NA	3.1
	4/24/02	7:55	ABC	14	42	49	61	97	98	245	OFF	245	NA	65						
	4/24/02	10:20	ABC	14	42	48	99	149	144	378	OFF	378	NA	65	5.1	5	4.3	3.8	NA	2.3
	4/25/02	9:10	ABC	14	38	45	87	129	128	327	OFF	327	NA	65						
	4/25/02	11:00	ABC	14	38	45	105	180	165	397	OFF	397	NA	65	5.6	6.8	5.1	4.8	NA	3
20	4/29/02	8:30	ABC	14	38	45	48	88	87	234	OFF	234	NA	80						
	4/29/02	11:00	ABC	14	38	45	98	155	153	458	OFF	458	NA	80	4.2	4.5	5.3	4.8	NA	2.9
	5/1/02	8:15	ABC	14	38	45	69	75	77	217	OFF	217	NA	80						
	5/1/02	11:30	ABC	14	38	45	79	127	127	319	OFF	319	NA	80	5.8	6.2	5.5	4.5	NA	3.2
	5/2/02	9:30	ABC	14	39	45	77	119	114	299	OFF	299	NA	80						
	5/2/02	11:30	ABC	14	38	45	92	148	152	403	OFF	403	NA	80	5.1	6	4.8	4.6	NA	3.3
21	5/6/02	8:10	ABC	14	38	45	60	92	95	237	OFF	237	NA	80						
	5/6/02	11:15	ABC	14	38	45	65	104	104	272	OFF	272	NA	80	4.8	5.2	4.2	4.3	NA	3.1
	5/7/02	8:25	ABC	14	38	45	62	97	98	254	OFF	254	NA	80						
	5/7/02	11:30	ABC	14	38	45	61	102	103	272	OFF	272	NA	80	4	5.3	4.5	4.4	NA	3
	5/8/02	7:50	ABC	14	38	45	56	89	93	245	OFF	245	NA	80						
	5/8/02	11:00	ABC	14	38	45	72	112	112	292	OFF	292	NA	80	4.3	5.3	3.7	4.1	NA	2.7
	5/9/02	9:25	ABC	14	38	45	76	120	117	299	OFF	299	NA	80						
	5/9/02	11:00	ABC	14	38	45	108	158	164	464	OFF	464	NA	80	5	5.5	4.8	4.2	NA	3
22	5/15/02	9:30	ABC	22	38	35	134	145	123	380	OFF	380	NA	80						
	5/15/02	11:20	ABC	24	41	40	148	172	155	485	OFF	485	NA	80	3.5	4	3.2	3.6	NA	2.6
	5/16/02	7:45	ABC	24	42	41	116	122	112	337	OFF	337	NA	75						
	5/16/02	11:00	ABC	24	42	41	106	128	114	357	OFF	357	NA	75	3.8	4.3	4.4	4	NA	3
	5/17/02	9:00	ABC	24	42	41	103	117	106	323	OFF	323	NA	70						
	5/17/02	10:30	ABC	24	42	40	133	152	141	455	OFF	455	NA	70	4	5.3	4.3	4.5	NA	2.6
23	5/21/02	7:40	ABC	24	43	42	69	84	75	240	OFF	240	NA	75						
	5/21/02	11:20	ABC	24	43	42	147	165	154	478	OFF	478	NA	75	5.1	6.5	4.5	4.3	NA	3
	5/22/02	9:20	ABC	24	42	41	120	134	119	364	OFF	364	NA	75						
	5/22/02	11:25	ABC	24	42	40	155	177	161	488	OFF	488	NA	75	4.5	5	4	3.8	NA	2.5
	5/23/02	7:15	ABC	24	42	40	86	95	87	274	OFF	274	NA	75						
	5/23/02	10:00	ABC	24	42	40	143	160	136	429	OFF	429	NA	75	4	4.2	3.8	2.9	NA	2.8
24	5/28/02	8:40	ABC	24	42	42	104	118	107	327	OFF	327	NA	75						
	5/28/02	11:25	ABC	24	42	41	159	173	160	458	OFF	458	NA	75	3.8	5.1	4.6	4.3	NA	2.5
	5/29/02	8:45	ABC	24	42	41	132	141	127	396	OFF	396	NA	75						
	5/29/02	11:00	ABC	20	25	25	202	182	177	486	OFF	486	NA	70	4.2	5.1	4.8	3.5	NA	2
	5/30/02	9:40	ABC	20	24	25	132	111	108	336	OFF	336	NA	70						
	5/30/02	11:00	ABC	20	24	25	188	171	165	493	OFF	493	NA	70	3.5	5.5	5.1	4.8	NA	2.3
25	6/3/02	8:00	ABC	20	24	25	94	78	79	237	OFF	237	NA	70						
	6/3/02	11:00	ABC	20	24	25	101	84	85	258	OFF	258	NA	70	4.8	6.2	4.6	4	NA	3
	6/4/02	8:30	ABC	20	24	25	127	104	104	315	OFF	315	NA	70						
	6/4/02	11:00	ABC	20	24	25	193	167	154	495	OFF	495	NA	70	4.5	6	5.2	4.2	NA	2.8
	6/5/02	8:05	ABC	20	24	25	118	102	103	315	OFF	315	NA	70						
	6/5/02	11:00	ABC	20	24	25	189	177	158	496	OFF	496	NA	70	5.5	7	6	5	NA	3.2
	6/6/02	9:10	ABC	16	26	26	116	127	119	333	OFF	333	NA	75						
	6/6/02	10:15	ABC	16	26	26	174	188	179	473	OFF	473	NA	75	5.1	5.6	4.2	4.9	NA	2.6

**TABLE 1: SYSTEM MONITORING (VACUUM, FLOWRATE AND FID READING) DATA
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA**

WEEK	DATE	TIME <i>hours</i>	WELL SCREEN	VACUUM			FLOWRATE							FID READINGS						
							ANEMOMETER FLOWRATE						△P <i>in. H2O</i>	Influent (A) ppm	Influent (B) ppm	Influent (C) ppm	Influent (ABC) ppm	Influent (BC) ppm	Effluent (Total) ppm	
				VE1-A <i>in. H2O</i>	VE1-B <i>in. H2O</i>	VE1-C <i>in. H2O</i>	A <i>cfm</i>	B <i>cfm</i>	C <i>cfm</i>	ABC <i>cfm</i>	BC <i>cfm</i>	Influent <i>cfm</i>	Effluent <i>cfm</i>							
26	6/11/02	8:00	ABC	16	25	25	74	78	77	224	OFF	224	NA	75						
	6/11/02	11:00	ABC	16	25	25	106	112	114	292	OFF	292	NA	75	3.8	4.7	5.1	4	NA	3
	6/12/02	8:00	ABC	16	26	26	71	78	80	230	OFF	230	NA	75						
	6/12/02	10:00	ABC	16	26	26	131	143	132	415	OFF	415	NA	75	4	6.1	4.5	4.2	NA	3.2
	6/13/02	7:40	ABC	16	25	26	83	88	86	245	OFF	245	NA	75						
	6/13/02	10:15	ABC	16	26	26	147	157	145	450	OFF	450	NA	75	4.6	6.3	5.2	5	NA	3.3
27	6/17/02	7:55	ABC	16	25	25	107	113	108	306	OFF	306	NA	75						
	6/17/02	11:00	ABC	16	25	25	177	170	165	490	OFF	490	NA	75	6	7.5	6.2	4.3	NA	3
	6/18/02	8:00	ABC	13	20	20	90	90	93	258	OFF	258	NA	60						
	6/18/02	11:00	ABC	12	18	18	170	179	170	491	OFF	491	NA	55	5.8	7.5	6	4	NA	3.1
	6/19/02	8:15	ABC	12	20	20	93	92	90	254	OFF	254	NA	60						
	6/19/02	11:00	ABC	12	20	20	152	164	154	474	OFF	474	NA	60	5.1	6.5	5.5	3.8	NA	3
28	6/20/02	9:00	ABC	13	20	20	93	90	91	249	OFF	249	NA	60						
	6/20/02	11:05	ABC	13	20	20	99	116	114	321	OFF	321	NA	60	4.8	6.3	5	4	NA	2.6
	6/24/02	8:30	ABC	13	20	20	84	85	85	233	OFF	232	NA	60						
	6/24/02	11:00	ABC	13	20	20	160	160	164	485	OFF	485	NA	60	4.5	5.3	6.1	4.7	NA	3
	6/25/02	8:35	ABC	13	20	20	93	94	90	247	OFF	247	NA	60						
	6/25/02	10:30	ABC	13	20	20	154	157	155	471	OFF	471	NA	60	6	8	6.3	4	NA	3.5
29	6/26/02	7:50	ABC	13	20	20	81	82	84	231	OFF	231	NA	60						
	6/26/02	10:00	ABC	13	20	20	124	128	127	415	OFF	415	NA	60	6.2	7.5	6.5	5	NA	2.7
	6/27/02	9:15	ABC	13	20	20	84	87	83	241	OFF	241	NA	60						
	6/27/02	11:00	ABC	13	20	20	135	135	136	455	OFF	455	NA	60	6.5	6.8	7	5.2	NA	3.1

Explanation:

cfm: Cubic Feet per Minute

FID: Flame Ionization Detector

in. H2O: Inches of Water

ppm: Parts per Million

△P: Differential Pressure

TABLE 2: VACUUM RESPONSES IN SOIL VAPOR MONITORING WELLS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA

WEEK	DATE	SAMPLE PROBE I/D	VACUUM RESPONSES (<i>Magnahelic Gauges</i>)											
			SVW-25 in. H ₂ O	SVW-26 in. H ₂ O	SVW-27 in. H ₂ O	SVW-28 in. H ₂ O	SVW-32 in. H ₂ O	SVW-33 in. H ₂ O	SVW-34 in. H ₂ O	SVW-35 in. H ₂ O	SVW-36 in. H ₂ O	SVW-37 in. H ₂ O	SVW-38 in. H ₂ O	SVW-39 in. H ₂ O
1	12/20/01	A	0	P	0	0.1	P	2	0	0	P	0	0	0
		B	0	0	0.3	P	0	P	0	P	0	0	0	P
		C	P	P	0.10	P	0	P	P	P	0	0	0	0.7
		D	P	P	0	0.1	0	0	0	P	0.9	0	0	0
		E	P	P	0.0	0	0.4	0	P	P	0	0	P	0.4
		F	P	0	1.5	P	P	0	0	P	NA	P	0	2.3
		G	P	1.8	1.4	P	P	1.5	0	P	NA	P	0	P
		H	P	2.2	0.4	P	0	P	0	P	NA	0	P	P
		I	3.2	0	1.6	NA	0.3	P	NA	P	NA	1.5	0	0
		J	4.5	P	0.8	NA	0	0	NA	P	NA	0	P	NA
2	12/28/01	A	0	P	0	0	P	1.8	0	0	P	0	0	0
		B	0	0	0.5	P	0.1	P	0	P	0	0	0	P
		C	P	P	0	P	0.3	P	P	P	0	0	0	0
		D	P	P	0.2	0.2	0	0	0.1	0	P	0	0	0
		E	P	P	0.1	0.5	0.3	0.7	P	P	0	0	P	0
		F	P	2.6	2.0	P	P	0	0	P	NA	P	0	0
		G	P	0	0.7	P	P	0	0.1	P	NA	P	0	P
		H	P	1.8	0	P	1.2	P	0.2	P	NA	2.5	P	P
		I	1.5	0.1	0	NA	0	P	NA	P	NA	0.1	0	0
		J	0	P	0.5	NA	0	0	NA	P	NA	0	P	NA
3	1/4/02	A	0	P	0	0	P	1.8	0	0	P	0	0	0
		B	0	0	0.1	P	0.0	P	0	P	0	0	0	P
		C	P	P	0.2	P	0.0	P	P	P	0	0	0	0.4
		D	P	P	0.0	0.2	0	0	0.0	0	P	0.6	0	0
		E	P	P	0.0	0.0	0.2	0.0	P	P	0	0	P	0.2
		F	P	0.0	1.7	P	P	0	0	P	NA	P	0	1.8
		G	P	1.5	1.2	P	P	1.1	0.0	P	NA	P	0	P
		H	P	2.7	0.2	P	0.1	P	0.0	P	NA	0.0	P	P
		I	2.9	0.0	1.8	NA	0.6	P	NA	P	NA	2.1	0	0
		J	4.3	P	0.8	NA	0	0	NA	P	NA	0	P	NA
4	1/10/02	A	0	P	0	0	P	1.8	0	0	P	0	0	0
		B	0	0	0.1	P	0.0	P	0	P	0	0	0	P
		C	P	P	0.2	P	0.0	P	P	P	0	0	0	0.4
		D	P	P	0.0	0.2	0	0	0.0	0	P	0.6	0	0
		E	P	P	0.0	0.0	0.2	0.0	P	P	0	0	P	0.2
		F	P	0.0	1.7	P	P	0	0	P	NA	P	0	1.8
		G	P	1.5	1.2	P	P	1.1	0.0	P	NA	P	0	P
		H	P	2.7	0.2	P	0.1	P	0.0	P	NA	0.0	P	P
		I	2.9	0.0	1.8	NA	0.6	P	NA	P	NA	2.1	0	0
		J	4.3	P	0.8	NA	0	0	NA	P	NA	0	P	NA

TABLE 2: VACUUM RESPONSES IN SOIL VAPOR MONITORING WELLS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA

WEEK	DATE	SAMPLE PROBE I/D	VACUUM RESPONSES (<i>Magnahelic Gauges</i>)											
			SVW-25 in. H ₂ O	SVW-26 in. H ₂ O	SVW-27 in. H ₂ O	SVW-28 in. H ₂ O	SVW-32 in. H ₂ O	SVW-33 in. H ₂ O	SVW-34 in. H ₂ O	SVW-35 in. H ₂ O	SVW-36 in. H ₂ O	SVW-37 in. H ₂ O	SVW-38 in. H ₂ O	SVW-39 in. H ₂ O
5	1/17/02	A	0	P	0	0	P	1.5	0	0	P	0	0	0
		B	0	0	0.0	P	0.0	P	0	P	0	0	0	P
		C	P	P	0.1	P	0.0	P	P	P	0	0	0	0.6
		D	P	P	0.0	0.3	0.3	0	0.0	0	P	1.1	0	0
		E	P	P	0.0	0.0	0.0	0.0	P	P	0	0	P	0.3
		F	P	0.0	2.1	P	P	0	0	P	NA	P	0	2.0
		G	P	1.8	1.5	P	P	1.4	0.0	P	NA	P	0	P
		H	P	3.1	0.3	P	0.3	P	0.0	P	NA	0.0	P	P
		I	3.2	0.0	2.1	NA	0.3	P	NA	P	NA	2.3	0.1	0
		J	4.6	P	0.6	NA	0	0	NA	P	NA	0	P	NA
6	1/24/02	A	0	P	0	0	P	0.9	0	0	P	0	0	0
		B	0	0	0.0	P	0.0	P	0	P	0	0	0	P
		C	P	P	0.2	P	0.0	P	P	P	0	0	0	0.2
		D	P	P	0.0	0.8	0.1	0	0.0	0	P	1.6	0	0
		E	P	P	0.0	0.0	0.8	0.0	P	P	0	0	P	0.5
		F	P	0.0	2.5	P	P	0	0	P	NA	P	0	2.3
		G	P	2.6	1.3	P	P	1.8	0.0	P	NA	P	0	P
		H	P	4.3	0.7	P	0.6	P	0.0	P	NA	0.0	P	P
		I	4.1	0.0	2.5	NA	0.5	P	NA	P	NA	2.1	0.4	0
		J	4.8	P	0.6	NA	0	0	NA	P	NA	0	P	NA
7	1/31/02	A	0	P	0	0	P	0.2	0	0	P	0	0	0
		B	0	0	0.2	P	0.0	P	0	P	0	0	0	P
		C	P	P	0.5	P	0.3	P	P	P	0	0	0	0.0
		D	P	P	0.7	0.6	0.0	2.3	0.0	0	P	0.0	0	0
		E	P	P	0.0	0.9	0.3	1.5	P	P	0	0	P	0.8
		F	P	4.9	2.2	P	P	0	0	P	NA	P	0	1.6
		G	P	5.1	4.1	P	P	3.7	0.0	P	NA	P	0	P
		H	P	4.5	0.0	P	3.2	P	0.2	P	NA	2.8	P	P
		I	1.8	0.0	4.5	NA	2.3	P	NA	P	NA	0.0	0.2	0.4
		J	4.1	P	4.2	NA	0.1	0	NA	P	NA	0	P	NA
8	2/6/02	A	0	P	0	0	P	0.4	0	0	P	0	0	0
		B	0	0	0.3	P	0.0	P	0	P	0	0	0	P
		C	P	P	0.4	P	0.6	P	P	P	0	0	0	0.0
		D	P	P	1.1	0.3	0.0	2.1	0.0	0	P	0.0	0	0
		E	P	P	0.0	1.3	0.2	1.8	P	P	0	0	P	1.3
		F	P	4.4	2.6	P	P	0	0	P	NA	P	0	1.9
		G	P	4.8	3.8	P	P	3.5	0.0	P	NA	P	0	P
		H	P	4.9	P	P	2.8	P	0.3	P	NA	3.1	P	P
		I	2.1	0.0	4.1	NA	2.9	P	NA	P	NA	0.0	0.4	0.7
		J	4.5	P	4.6	NA	0	0	NA	P	NA	0	P	NA

TABLE 2: VACUUM RESPONSES IN SOIL VAPOR MONITORING WELLS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA

WEEK	DATE	SAMPLE PROBE I/D	VACUUM RESPONSES (<i>Magnahelic Gauges</i>)											
			SVW-25 <i>in. H₂O</i>	SVW-26 <i>in. H₂O</i>	SVW-27 <i>in. H₂O</i>	SVW-28 <i>in. H₂O</i>	SVW-32 <i>in. H₂O</i>	SVW-33 <i>in. H₂O</i>	SVW-34 <i>in. H₂O</i>	SVW-35 <i>in. H₂O</i>	SVW-36 <i>in. H₂O</i>	SVW-37 <i>in. H₂O</i>	SVW-38 <i>in. H₂O</i>	SVW-39 <i>in. H₂O</i>
11	2/28/02	A	0	P	0	0	P	0.0	P	P	P	0	P	0.1
		B	0	P	0.2	P	0.0	P	P	P	0	P	P	P
		C	P	P	0.6	P	0.2	P	P	P	0	P	P	0.0
		D	P	P	1.5	0.2	0.0	0.0	P	P	0.0	P	P	0
		E	P	P	0.0	1.1	0.0	1.5	P	0.00	0	0	0.30	0.1
		F	P	2.5	0.6	P	P	0.2	0	P	NA	P	0	0.0
		G	P	2.3	2.1	P	P	0.0	0.0	P	NA	P	P	P
		H	P	2.4	P	P	0.0	P	0.2	P	NA	0.0	P	P
		I	2.5	P	0.0	NA	0.0	P	NA	0.00	NA	0.0	P	0.2
		J	0.8	P	0.0	NA	0.0	0	NA	P	NA	0	0.00	NA
12	3/6/02	A	0	P	0	0	P	0.2	P	P	P	0	P	P
		B	0	P	0.0	P	0.0	P	P	P	0	P	P	0.00
		C	P	P	0.5	P	0.1	P	P	P	0	P	P	0.0
		D	P	P	2.2	0.0	0.1	0.0	0.0	P	P	0.0	P	0
		E	P	P	0.1	0.6	0.5	1.8	P	0.00	0	0	0.00	0.2
		F	P	3.5	1.4	P	P	0.1	0	P	NA	P	0	P
		G	P	3.2	2.6	P	P	1.2	P	P	NA	P	P	P
		H	P	3.0	P	P	0.0	P	P	P	NA	0.0	P	0.20
		I	3.5	P	4.2	NA	0.8	P	NA	0.00	NA	0.0	P	0.0
		J	0.5	P	0.0	NA	0	0	NA	P	NA	0	0.1	NA
13	3/13/02	A	0	P	0	0	P	0.4	P	P	P	0	P	0.0
		B	0	P	0.0	P	0.0	P	P	P	0	P	P	P
		C	P	P	0.4	P	0.2	P	P	P	0	P	P	0.0
		D	P	P	2.6	0.0	0.0	0.5	0.0	P	P	0.0	P	0
		E	P	P	0.0	0.8	0.8	0.1	P	0.00	0	0	0.00	0.4
		F	P	3.7	2.0	P	P	0.4	0	P	NA	P	0	0.1
		G	P	3.1	2.4	P	P	1.4	P	P	NA	P	P	P
		H	P	2.9	P	P	0.0	P	P	P	NA	0.0	P	P
		I	3.7	P	3.9	NA	1.1	P	NA	0.00	NA	0.0	P	0.0
		J	0.7	P	0.0	NA	0.0	0	NA	P	NA	0	0.30	NA
14	3/20/02	A	0	P	0	0	P	0.2	P	P	P	0	P	0.0
		B	0	P	0.0	P	0.0	P	P	P	0	P	P	P
		C	P	P	0.8	P	0.0	P	P	P	0	P	P	0.0
		D	P	P	2.1	0.0	0.0	0.8	0.0	P	P	0.0	P	0
		E	P	P	0.0	0.5	1.1	0.0	P	0.00	0	0	0.00	0.5
		F	P	3.2	1.8	P	P	0.2	0	P	NA	P	0	0.0
		G	P	3.5	2.7	P	P	1.5	P	P	NA	P	P	P
		H	P	3.1	P	P	0.0	P	P	P	NA	0.0	P	P
		I	2.8	P	3.5	NA	1.6	P	NA	0.00	NA	0.0	P	0.0
		J	0.5	P	0.0	NA	0.0	0	NA	P	NA	0	0.50	NA

TABLE 2: VACUUM RESPONSES IN SOIL VAPOR MONITORING WELLS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA

WEEK	DATE	SAMPLE PROBE I/D	VACUUM RESPONSES (<i>Magnahelic Gauges</i>)											
			SVW-25 in. H ₂ O	SVW-26 in. H ₂ O	SVW-27 in. H ₂ O	SVW-28 in. H ₂ O	SVW-32 in. H ₂ O	SVW-33 in. H ₂ O	SVW-34 in. H ₂ O	SVW-35 in. H ₂ O	SVW-36 in. H ₂ O	SVW-37 in. H ₂ O	SVW-38 in. H ₂ O	SVW-39 in. H ₂ O
15	3/27/02	A	0	P	0	0	P	0.1	P	P	P	0	P	0.0
		B	0	P	0.0	P	0.0	P	P	P	0	P	P	P
		C	P	P	1.2	P	0.0	P	P	P	0	P	P	0.0
		D	P	P	2.5	0.0	0.0	1.1	0.0	P	P	0.0	P	0.0
		E	P	P	0.0	0.8	1.6	0.0	P	0.00	0	0	0.00	0.8
		F	P	3.8	2.1	P	P	0.2	0	P	NA	P	0	0.0
		G	P	4.1	2.8	P	P	1.8	P	P	NA	P	P	P
		H	P	3.5	P	P	0.0	P	P	P	NA	0.0	P	P
		I	3.2	P	3.1	NA	2.0	P	NA	0.00	NA	0.0	P	0.0
		J	0.4	P	0.0	NA	0.0	0	NA	P	NA	0	0.80	NA
16	4/4/02	A	0	P	0	0	P	0.0	P	P	P	0	P	0.0
		B	0	P	0.0	P	0.0	P	P	P	0	P	P	P
		C	P	P	1.4	P	0.0	P	P	P	0	P	P	0.0
		D	P	P	2.3	0.0	0.0	1.3	0.0	P	P	0.0	P	0
		E	P	P	0.0	1.1	1.5	0.0	P	0.00	0	0	0.00	0.6
		F	P	4.2	1.8	P	P	0.3	0	P	NA	P	0	0.0
		G	P	4.5	2.7	P	P	2.0	P	P	NA	P	P	P
		H	P	3.6	P	P	0.0	P	P	P	NA	0.0	P	P
		I	3.1	P	3.2	NA	1.5	P	NA	0.00	NA	0.0	P	0.0
		J	0.6	P	0.0	NA	0.0	0	NA	P	NA	0	1.10	NA
17	4/11/02	A	0	P	0	0	P	0.0	P	P	P	0	P	0.0
		B	0	P	0.0	P	0.0	P	P	P	0	P	P	P
		C	P	P	1.5	P	0.0	P	P	P	0	P	P	0.0
		D	P	P	2.5	0.0	0.0	1.2	0.0	P	P	0.0	P	0
		E	P	P	0.0	1.5	1.1	0.0	P	0.00	0	0	0.00	0.5
		F	P	4.5	2.1	P	P	0.4	0	P	NA	P	0	0.0
		G	P	4.8	2.6	P	P	2.3	P	P	NA	P	P	P
		H	P	4.1	P	P	0.0	P	P	P	NA	0.0	P	P
		I	3.3	P	3.0	NA	1.8	P	NA	0.00	NA	0.0	P	0.0
		J	0.8	P	0.0	NA	0.0	0	NA	P	NA	0	1.70	NA
18	4/18/02	A	0	P	0	0	P	0.0	P	P	P	0	P	0.0
		B	0	P	0.0	P	0.0	P	P	P	0	P	P	P
		C	P	P	1.7	P	0.0	P	P	P	0	P	P	0.0
		D	P	P	2.2	0.8	0.0	1.3	0.0	P	P	0.0	P	0
		E	P	P	0.0	0.2	1.0	0.0	P	0.00	0	0	0.00	0.9
		F	P	4.2	2.0	P	P	0.5	0	P	NA	P	0	0.0
		G	P	4.8	2.8	P	P	2.5	P	P	NA	P	P	P
		H	P	4.5	P	P	0.0	P	P	P	NA	0.0	P	P
		I	3.4	P	3.2	NA	1.5	P	NA	0.00	NA	0.0	P	0.0
		J	0.6	P	0.0	NA	0.0	0	NA	P	NA	0	1.50	NA

TABLE 2: VACUUM RESPONSES IN SOIL VAPOR MONITORING WELLS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA

WEEK	DATE	SAMPLE PROBE I/D	VACUUM RESPONSES (<i>Magnahelic Gauges</i>)											
			SVW-25 in. H ₂ O	SVW-26 in. H ₂ O	SVW-27 in. H ₂ O	SVW-28 in. H ₂ O	SVW-32 in. H ₂ O	SVW-33 in. H ₂ O	SVW-34 in. H ₂ O	SVW-35 in. H ₂ O	SVW-36 in. H ₂ O	SVW-37 in. H ₂ O	SVW-38 in. H ₂ O	SVW-39 in. H ₂ O
19	4/25/02	A	0	P	0	0	P	0.0	P	P	P	0	P	0.0
		B	0	P	0.0	P	0.0	P	P	P	0	P	P	P
		C	P	P	1.5	P	0.0	P	P	P	0	P	P	0.0
		D	P	P	2.2	1.0	0.0	1.1	0.0	P	P	0.0	P	0
		E	P	P	0.0	0.3	1.2	0.0	P	0.00	0	0	0.00	1.1
		F	P	3.8	2.1	P	P	0.6	0	P	NA	P	0	0.0
		G	P	4.5	2.6	P	P	2.8	P	P	NA	P	P	P
		H	P	4.5	P	P	0.0	P	P	P	NA	0.0	P	P
		I	3.1	P	3.3	NA	1.4	P	NA	0.00	NA	0.0	P	0.0
		J	0.2	P	0.0	NA	0.0	0	NA	P	NA	0	1.30	NA
20	5/2/02	A	0	P	0	0	P	0.0	P	P	P	0	P	0.0
		B	0	P	0.0	P	0.0	P	P	P	0	P	P	P
		C	P	P	1.7	P	0.0	P	P	P	0	P	P	0.0
		D	P	P	1.8	1.1	0.0	1.3	0.0	P	P	0.0	P	0
		E	P	P	0.0	0.2	1.0	0.0	P	0.00	0	0	0.00	0.7
		F	P	3.5	2.2	P	P	0.4	0	P	NA	P	0	0.0
		G	P	4.6	2.5	P	P	2.6	P	P	NA	P	P	P
		H	P	4.5	P	P	0.0	P	P	P	NA	0.0	P	P
		I	3.2	P	2.9	NA	1.3	P	NA	0.00	NA	0.0	P	0.0
		J	0.3	P	0.0	NA	0.0	0	NA	0.00	NA	0	1.00	NA
21	5/9/02	A	0	P	0	0	P	0.0	P	P	P	0	P	0.0
		B	0	P	0.0	P	0.0	P	P	P	0	P	P	P
		C	P	P	1.2	P	0.0	P	P	P	0	P	P	0.0
		D	P	P	1.3	0.9	0.0	1.0	0.0	P	P	0.0	P	0
		E	P	P	0.0	0.3	1.1	0.0	P	0.00	0	0	0.00	0.5
		F	P	1.6	1.9	P	P	0.2	0	P	NA	P	0	0.0
		G	P	3.3	2.1	P	P	2.1	P	P	NA	P	P	P
		H	P	2.8	P	P	0.0	P	P	P	NA	0.0	P	P
		I	3.3	P	2.3	NA	1.4	P	NA	0.00	NA	0.0	P	0.1
		J	0.5	P	0.0	NA	0.0	0	NA	P	NA	0	0.80	NA
22	5/17/02	A	0	P	0	0	P	0.0	P	P	P	0	P	0.0
		B	0	P	0.0	P	0.0	P	P	P	0	P	P	P
		C	P	P	1.1	P	0.0	P	P	P	0	P	P	0.0
		D	P	P	1.4	1.1	0.0	1.2	0.0	P	P	0.0	P	0
		E	P	P	0.0	0.6	1.0	0.0	P	0.00	0	0	0.00	0.6
		F	P	1.5	2.0	P	P	0.2	0	P	NA	P	0	0.0
		G	P	3.7	2.2	P	P	1.9	P	P	NA	P	P	P
		H	P	2.6	P	P	0.0	P	P	P	NA	0.0	P	P
		I	3.5	P	2.1	NA	1.2	P	NA	0.00	NA	0.0	P	0.2
		J	0.8	P	0.0	NA	0.0	0	NA	P	NA	0	0.30	NA

TABLE 2: VACUUM RESPONSES IN SOIL VAPOR MONITORING WELLS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA

WEEK	DATE	SAMPLE PROBE I/D	VACUUM RESPONSES (<i>Magnahelic Gauges</i>)											
			SVW-25 in. H ₂ O	SVW-26 in. H ₂ O	SVW-27 in. H ₂ O	SVW-28 in. H ₂ O	SVW-32 in. H ₂ O	SVW-33 in. H ₂ O	SVW-34 in. H ₂ O	SVW-35 in. H ₂ O	SVW-36 in. H ₂ O	SVW-37 in. H ₂ O	SVW-38 in. H ₂ O	SVW-39 in. H ₂ O
23	5/22/02	A	0	P	0	0	P	0.0	P	P	P	0	P	0.0
		B	0	P	0.0	P	0.0	P	P	P	0	P	P	P
		C	P	P	1.6	P	0.0	P	P	P	0	P	P	0.0
		D	P	P	2.0	0.9	0.0	1.5	0.0	P	P	0.0	P	0
		E	P	P	0.0	0.7	0.8	0.0	P	0.00	0	0	0.00	0.2
		F	P	1.7	2.2	P	P	0.0	0	P	NA	P	0	0.0
		G	P	4.2	1.8	P	P	2.2	P	P	NA	P	P	P
		H	P	3.1	P	P	0.0	P	P	P	NA	0.0	P	P
		I	3.4	P	2.5	NA	1.6	P	NA	0.00	NA	0.0	P	0.0
		J	0.2	P	0.0	NA	0.0	0	NA	P	NA	0	-0.20	NA
24	5/30/02	A	0	P	0	0	P	0.0	P	P	P	0	P	0.0
		B	0	P	0.0	P	0.0	P	P	P	0	P	P	P
		C	P	P	1.2	P	0.0	P	P	P	0	P	P	0.0
		D	P	P	1.8	1.1	0.0	1.1	0.0	P	P	0.0	P	0
		E	P	P	0.0	0.5	0.6	0.0	P	0.00	0	0	0.00	1.1
		F	P	1.5	1.9	P	P	0.6	0	P	NA	P	0	0.0
		G	P	4.4	1.5	P	P	2.8	P	P	NA	P	P	P
		H	P	3.0	P	P	0.0	P	P	P	NA	0.0	P	P
		I	3.5	P	2.3	NA	1.4	P	NA	0.00	NA	0.0	P	0.0
		J	0.4	P	0.0	NA	0.0	0	NA	P	NA	0	1.30	NA
25	6/6/02	A	0	P	0	0	P	0.0	P	P	P	0	P	0.0
		B	0	P	0.0	P	0.0	P	P	P	0	P	P	P
		C	P	P	1.5	P	0.0	P	P	P	0	P	P	0.0
		D	P	P	1.6	1.3	0.0	0.9	0.0	P	P	0.0	P	0
		E	P	P	0.0	0.8	0.8	0.0	P	0.00	0	0	0.00	0.0
		F	P	1.8	2.1	P	P	0.0	0	P	NA	P	0	0.0
		G	P	4.8	2.0	P	P	2.3	P	P	NA	P	P	P
		H	P	2.8	P	P	0.0	P	P	P	NA	0.0	P	P
		I	3.2	P	2.0	NA	1.3	P	NA	0.00	NA	0.0	P	0.0
		J	0.2	P	0.0	NA	0.0	0	NA	P	NA	0	0.00	NA
26	6/13/02	A	0	P	0	0	P	0.0	P	P	P	0	P	0.0
		B	0	P	0.0	P	0.0	P	P	P	0	P	P	P
		C	P	P	1.7	P	0.0	P	P	P	0	P	P	0.0
		D	P	P	1.5	1.6	0.0	1.1	0.0	P	P	0.0	P	0
		E	P	P	0.0	1.1	1.0	0.0	P	0.00	0	0	0.00	0.0
		F	P	1.9	2.5	P	P	0.0	0	P	NA	P	0	0.0
		G	P	4.6	2.2	P	P	2.5	P	P	NA	P	P	P
		H	P	3.1	P	P	0.0	P	P	P	NA	0.0	P	P
		I	4.1	P	2.5	NA	1.5	P	NA	0.00	NA	0.0	P	0.0
		J	0.6	P	0.0	NA	0.0	0	NA	P	NA	0	0.00	NA

TABLE 2: VACUUM RESPONSES IN SOIL VAPOR MONITORING WELLS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA

WEEK	DATE	SAMPLE PROBE I/D	VACUUM RESPONSES (<i>Magnahelic Gauges</i>)											
			SVW-25 in. H ₂ O	SVW-26 in. H ₂ O	SVW-27 in. H ₂ O	SVW-28 in. H ₂ O	SVW-32 in. H ₂ O	SVW-33 in. H ₂ O	SVW-34 in. H ₂ O	SVW-35 in. H ₂ O	SVW-36 in. H ₂ O	SVW-37 in. H ₂ O	SVW-38 in. H ₂ O	SVW-39 in. H ₂ O
27	6/20/02	A	0	P	0	0	P	0.0	P	P	P	0	P	0.0
		B	0	P	0.0	P	0.0	P	P	P	0	P	P	P
		C	P	P	1.5	P	0.0	P	P	P	0	P	P	0.0
		D	P	P	1.6	1.4	0.0	1.3	0.0	P	P	0.0	P	0
		E	P	P	0.0	1.3	1.2	0.0	P	0.00	0	0	0.00	0.0
		F	P	1.7	2.3	P	P	0.0	0	P	NA	P	0	0.0
		G	P	4.3	2.1	P	P	2.1	P	P	NA	P	P	P
		H	P	2.9	P	P	0.0	P	P	P	NA	0.0	P	P
		I	4	P	2.8	NA	1.2	P	NA	0.00	NA	0.0	P	0.0
		J	0.3	P	0.0	NA	0.0	0	NA	P	NA	0	0.00	NA
28	6/27/02	A	0	P	0	0	P	0.0	P	P	P	0	P	0.0
		B	0	P	0.0	P	0.0	P	P	P	0	P	P	P
		C	P	P	1.4	P	0.0	P	P	P	0	P	P	0.0
		D	P	P	1.7	1.6	0.0	1.1	0.0	P	P	0.0	P	0
		E	P	P	0.0	1.4	0.9	0.0	P	0.00	0	0	0.00	0.0
		F	P	1.9	2.8	P	P	0.0	0	P	NA	P	0	0.0
		G	P	4.2	1.9	P	P	2.3	P	P	NA	P	P	P
		H	P	2.5	P	P	0.0	P	P	P	NA	0.0	P	P
		I	4.1	P	3.0	NA	1.5	P	NA	0.00	NA	0.0	P	0.0
		J	0.2	P	0.0	NA	0.0	0	NA	P	NA	0	0.00	NA

Explanation:

in. H₂O: Inches of Water

NA: Not Applicable

P: Plugged

SVW: Soil Vapor Monitoring Well

**TABLE 3: SUMMARY OF LABORATORY ANALYTICAL RESULTS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA**

Week	Sample ID	Sample Location	Sample Matrix	Date Sampled	VOCs USING TO - 14 (ppmv)												
					Dichlorodifluoromethane	Chloroethane	Trichlorofluoromethane (Freon 11)	1,1-Dichloroethene (1,1-DCE)	1,1,2-C1,2,2,2-F ethane (Freon 113)	Chloroform	1,1,1-Trichloroethane (1,1,1-TCA)	Carbon Tetrachloride (CCl4)	Trichloroethylene (TCE)	Toluene	Tetrachloroethene (PCE)	p,&m-Xylene	Total VOC
1	T4-VE1-C-1-01	Screen C	Air	12/18/01	0.0030	ND	0.0680	0.0230	0.0300	0.0930	0.0041	0.1750	0.0980	0.1010	0.0100	0.0012	0.6075
	T4-VE1-EFF-1-02	Effluent	Air	12/18/01	ND	ND	0.0067	ND	ND	ND	ND	ND	0.0044	ND	ND	0.0182	
	T4-VE1-C-1-03	Screen C	Air	12/19/01	0.0019	ND	0.0610	0.0340	0.0430	0.0990	0.0057	0.2150	0.1120	0.0350	0.0130	0.0013	0.6236
	T4-VE1-EFF-1-04	Effluent	Air	12/19/01	0.0028	ND	0.0200	ND	0.0024	ND	ND	ND	ND	0.0039	ND	ND	0.0315
	T4-VE1-C-1-05	Screen C	Air	12/20/01	0.0017	ND	0.0560	0.0430	0.0470	0.1150	0.0073	0.2490	0.1350	0.0220	0.0190	0.0011	0.6993
	T4-VE1-EFF-1-06	Effluent	Air	12/20/01	0.0031	ND	0.0230	ND	0.0033	ND	ND	ND	ND	0.0025	ND	ND	0.0336
	T4-VE1-C-1-07	Screen C	Air	12/21/01	ND	ND	0.0550	0.0420	0.0510	0.1200	0.0084	0.2810	0.1340	0.0077	0.0270	0.0047	0.7333
	T4-VE1-EFF-1-08	Effluent	Air	12/21/01	0.0031	ND	0.0260	ND	0.0050	ND	ND	ND	ND	0.0019	ND	ND	0.0374
2	T4-VE1-B-2-01	Screen B	Air	12/24/01	0.0140	ND	0.0033	0.0061	0.0089	0.1760	0.0042	0.1840	0.0150	0.1130	0.0032	ND	0.5294
	T4-VE1-EFF-2-02	Effluent	Air	12/24/01	0.0025	ND	0.0950	ND	0.0660	ND	ND	ND	ND	0.0047	ND	ND	0.1698
	T4-VE1-B-2-03	Screen B	Air	12/26/01	0.0064	ND	0.0190	0.0460	0.0570	0.1470	0.0140	0.2710	0.0700	0.1290	0.0130	0.0023	0.7747
	T4-VE1-EFF-2-04	Effluent	Air	12/26/01	0.0081	ND	0.1410	ND	0.1530	ND	ND	ND	ND	0.0046	ND	ND	0.3116
	T4-VE1-B-2-05	Screen B	Air	12/27/01	0.0054	ND	0.0230	0.0590	0.0710	0.1500	0.0160	0.3130	0.0730	0.0750	0.0180	ND	0.8034
	T4-VE1-EFF-2-06	Effluent	Air	12/27/01	0.0025	ND	0.1600	ND	0.1820	ND	ND	ND	ND	0.0034	ND	ND	0.3512
	T4-VE1-B-2-07	Screen B	Air	12/28/01	0.0053	ND	0.0270	0.0690	0.0790	0.1640	0.0170	0.3530	0.0850	0.0990	0.0170	ND	0.9153
	T4-VE1-EFF-2-08	Effluent	Air	12/28/01	0.0018	ND	0.1400	ND	0.2110	ND	ND	ND	ND	0.0025	ND	ND	0.3569
3	T4-VE1-A-3-01	Screen A	Air	12/31/01	ND	ND	ND	0.0330	0.0160	0.2940	ND	0.6760	0.0070	0.0630	0.0180	0.0180	1.1406
	T4-VE1-EFF-3-02	Effluent	Air	12/31/01	0.0050	ND	0.1720	ND	0.2400	ND	ND	ND	ND	0.0022	ND	ND	0.4218
	T4-VE1-A-3-03	Screen A	Air	1/2/02	ND	ND	ND	0.0360	0.0140	0.3170	ND	0.5920	0.0065	0.0410	0.0085	ND	1.0150
	T4-VE1-EFF-3-04	Effluent	Air	1/2/02	0.0043	ND	0.1490	ND	0.2120	ND	ND	ND	ND	0.0027	ND	ND	0.3743
	T4-VE1-A-3-05	Screen A	Air	1/3/02	ND	ND	ND	0.0360	0.0140	0.3320	ND	0.5260	0.0070	0.0460	0.0092	ND	0.9873
	T4-VE1-EFF-3-06	Effluent	Air	1/3/02	0.0041	ND	0.1360	ND	0.1920	ND	ND	ND	ND	0.0018	ND	ND	0.3370
4	T4-VE1-B-4-01	Screen B	Air	1/7/02	0.0049	ND	0.0340	0.0940	0.0970	0.1990	0.0210	0.4470	0.1260	0.2220	0.0220	0.0023	1.2692
	T4-VE1-C-4-02	Screen C	Air	1/7/02	0.0015	ND	0.0540	0.0220	0.0230	0.1120	0.0095	0.1640	0.1490	0.1420	0.0130	0.0031	0.7011
	T4-VE1-INN-4-03	Influent	Air	1/7/02	ND	ND	0.0420	0.0500	0.0560	0.1500	0.0150	0.2930	0.1470	0.0056	0.0190	ND	0.7776
	T4-VE1-P1EFF-4-04	Pri-1-Effluent	Air	1/7/02	0.0033	ND	0.0720	0.0960	0.1950	0.1720	0.0180	0.3630	0.0025	0.0690	ND	0.0057	1.0211
	T4-VE1-P2EFF-4-05	Pri-2-Effluent	Air	1/7/02	ND	ND	0.0530	0.1340	0.1810	0.2020	0.0210	0.4070	0.0043	0.0670	ND	ND	1.0760
	T4-VE1-S1EFF-4-06	Sec-1-Effluent	Air	1/7/02	0.0050	ND	0.1860	ND	0.3670	ND	ND	ND	ND	0.2350	0.0050	0.0120	0.8471
	T4-VE1-S2EFF-4-07	Sec-2-Effluent	Air	1/7/02	0.0045	ND	0.1760	ND	0.3140	ND	ND	ND	ND	0.0110	ND	0.0035	0.5090
	T4-VE1-EFF-4-08	Effluent	Air	1/7/02	0.0062	ND	0.2400	ND	0.4260	ND	ND	ND	ND	0.0030	0.0038	ND	0.6813

**TABLE 3: SUMMARY OF LABORATORY ANALYTICAL RESULTS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA**

Week	Sample ID	Sample Location	Sample Matrix	Date Sampled	VOCs USING TO - 14 (ppmv)												
					Dichlorodifluoromethane	Chloroethane	Trichlorofluoromethane (Freon 11)	1,1-Dichloroethene (1,1-DCE)	1,1,2-C1,2,2,F ethane (Freon 113)	Chloroform	1,1,1-Trichloroethane (1,1,1-TCA)	Carbon Tetrachloride (CCl4)	Trichloroethylene (TCE)	Toluene	Tetrachloroethylene (PCE)	p,&m-Xylene	Total VOC
5	T4-VE1-INN-5-01	Influent	Air	1/14/02	0.0036	ND	0.0420	0.0640	0.0840	0.1720	0.0160	0.4630	0.1660	0.0067	0.0290	0.0130	1.0732
	T4-VE1-EFF-5-02	Effluent	Air	1/14/02	0.0057	ND	0.0930	0.0012	0.1490	ND	ND	ND	ND	0.0018	ND	ND	0.2526
6	T4-VE1-B-6-01	Screen B	Air	1/21/02	0.0061	ND	0.0300	0.0940	0.0890	0.1970	0.0210	0.6760	0.0910	0.1220	0.0300	0.0065	1.3626
	T4-VE1-C-6-02	Screen C	Air	1/21/02	ND	ND	0.0680	0.0350	0.0820	0.1300	0.0092	0.3070	0.1910	0.0920	0.0210	0.0052	0.9427
7	T4-VE1-INN-6-03	Influent	Air	1/21/02	ND	ND	0.0450	0.0620	0.0800	0.1680	0.0140	0.4920	0.1610	0.0079	0.0350	0.0049	1.0698
	T4-VE1-EFF-6-04	Effluent	Air	1/21/02	0.0074	ND	0.1230	0.0090	0.2500	0.0020	ND	ND	ND	0.0010	ND	ND	0.3935
8	T4-VE1-A-7-01	Screen A	Air	1/28/02	0.0060	ND	ND	0.0110	0.0065	0.3710	0.0083	0.8190	ND	0.0490	0.0140	0.0089	1.2937
	T4-VE1-B-7-02	Screen B	Air	1/28/02	0.0049	ND	0.0330	0.0870	0.0860	0.1940	0.0170	0.5800	0.0910	0.0450	0.0440	0.0058	1.1877
9	T4-VE1-C-7-02	Screen C	Air	1/28/02	ND	ND	0.0690	0.0310	0.0800	0.1180	0.0083	0.2550	0.1960	0.0280	0.0240	0.0042	0.8155
	T4-VE1-INN-7-04	Influent	Air	1/28/02	ND	ND	0.0420	0.0520	0.0710	0.1650	0.0120	0.4320	0.1320	0.0038	0.0350	0.0045	0.9835
10	T4-VE1-EFF-7-05	Effluent	Air	1/28/02	0.0057	ND	0.0630	0.0150	0.1350	0.0065	ND	0.0055	ND	ND	ND	ND	0.2348
	T4-VE1-A-8-01	Screen A	Air	2/4/02	ND	ND	ND	ND	ND	0.3480	ND	1.3800	ND	0.0660	0.0330	ND	1.8270
11	T4-VE1-B-8-02	Screen B	Air	2/4/02	0.0064	ND	0.0450	0.1000	0.1070	0.2300	0.0190	0.6320	0.1040	0.1010	0.0550	0.0140	1.4192
	T4-VE1-C-8-032	Screen C	Air	2/4/02	ND	ND	0.0490	0.0340	0.0870	0.1330	0.0093	0.2790	0.2220	0.0690	0.0260	0.0023	0.9106
12	T4-VE1-INN-8-04	Influent	Air	2/4/02	0.0043	ND	0.0620	0.0590	0.0810	0.2120	0.0130	0.5870	0.1610	0.0048	0.0450	ND	1.2291
	T4-VE1-P1EFF-8-05	Pri-1-Effluent	Air	2/4/02	0.0043	ND	0.0830	0.1180	0.1340	0.2810	0.0280	0.6470	ND	0.0330	0.0042	0.0042	1.3559
13	T4-VE1-P2EFF-8-06	Pri-2-Effluent	Air	2/4/02	ND	ND	0.0750	0.1050	0.1110	0.2900	0.0270	0.6740	ND	0.0300	0.0049	ND	1.3169
	T4-VE1-S1EFF-8-07	Sec-1-Effluent	Air	2/4/02	0.0051	ND	0.1020	0.0460	0.2120	0.0390	0.0049	0.0570	ND	0.1010	ND	0.0080	0.5510
14	T4-VE1-S2EFF-8-08	Sec-2-Effluent	Air	2/4/02	0.0032	ND	0.0770	0.0240	0.1590	0.0110	0.0015	0.0160	ND	0.0062	ND	0.0017	0.3069
	T4-VE1-EFF-8-09	Effluent	Air	2/4/02	0.0058	ND	0.1210	0.0490	0.2330	0.0380	0.0049	0.0650	ND	ND	ND	ND	0.5242
15	T4-VE1-A-10-01	Screen A	Air	2/21/02	0.0044	ND	ND	0.0160	0.0083	0.3570	0.0086	0.8300	0.0043	0.0860	0.0096	0.0061	1.3303
	T4-VE1-B-10-02	Screen B	Air	2/21/02	0.0058	ND	0.0630	0.1150	0.1260	0.2270	0.0210	0.6980	0.1060	0.1100	0.0490	0.0170	1.5443
16	T4-VE1-C-10-03	Screen C	Air	2/21/02	ND	ND	0.1140	0.0360	0.0890	0.1440	0.0110	0.2880	0.2380	0.0890	0.0230	0.0084	1.0434
	T4-VE1-INN-10-04	Influent	Air	2/21/02	ND	ND	0.0600	0.0530	0.0730	0.2080	0.0120	0.5040	0.1390	0.0059	0.0330	0.0110	1.0989
17	T4-VE1-EFF-10-05	Effluent	Air	2/21/02	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0010	ND	ND	0.0029
	T4-VE1-INN-11-01	Influent	Air	2/26/02	0.0052	ND	0.0720	0.0500	0.0740	0.2130	0.0110	0.4530	0.1260	0.0040	0.0310	0.0089	1.0512
18	T4-VE1-EFF-11-02	Effluent	Air	2/26/02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	T4-VE1-A-12-01	Screen A	Air	3/4/02	0.0064	ND	ND	0.0057	0.0065	0.2830	0.0043	0.3730	ND	0.0560	0.0045	0.0260	0.7865
19	T4-VE1-B-12-02	Screen B	Air	3/4/02	0.0047	ND	0.0500	0.0890	0.0950	0.2020	0.0180	0.4650	0.0850	0.0780	0.0370	0.0049	1.1286
	T4-VE1-C-12-03	Screen C	Air	3/4/02	ND	ND	0.1330	0.0340	0.0840	0.1320	0.0100	0.2500	0.2170	0.0550	0.0220	0.0020	0.9446
20	T4-VE1-INN-12-04	Influent	Air	3/4/02	0.0037	ND	0.0620	0.0460	0.0630	0.1960	0.0100	0.3490	0.1190	0.0023	0.0290	0.0032	0.8855
	T4-VE1-EFF-12-05	Effluent	Air	3/4/02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

**TABLE 3: SUMMARY OF LABORATORY ANALYTICAL RESULTS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA**

Week	Sample ID	Sample Location	Sample Matrix	Date Sampled	VOCs USING TO - 14 (ppmv)												
					Dichlorodifluoromethane	Chloroethane	Trichlorofluoromethane (Freon 11)	1,1-Dichloroethene (1,1-DCE)	1,1,2-C1,2,2,F ethane (Freon 113)	Chloroform	1,1,1-Trichloroethane (1,1,1-TCA)	Carbon Tetrachloride (CCl4)	Trichloroethylene (TCE)	Toluene	Tetrachloroethylene (PCE)	p,&m-Xylene	Total VOC
13	T4-VE1-INN-13-01	Influent	Air	3/11/02	0.0039	ND	0.0720	0.0490	0.0660	0.2040	0.0100	0.3070	0.1330	0.0048	0.0320	0.0100	0.9021
	T4-VE1-EFF-13-02	Effluent	Air	3/11/02	0.0140	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0160
	T4-VE1-P1EFF-13-03	Pri-1-Effluent	Air	3/11/02	0.0052	ND	0.0560	ND	0.0260	0.0012	ND	0.0030	ND	0.0260	ND	0.0038	0.1732
	T4-VE1-P2EFF-13-04	Pri-2-Effluent	Air	3/11/02	0.0048	ND	0.0730	ND	0.0500	ND	ND	0.0015	ND	0.0280	ND	0.0017	0.1622
	T4-VE1-S1EFF-13-05	Sec-1-Effluent	Air	3/11/02	0.0097	ND	ND	ND	0.0020	ND	ND	ND	ND	0.0830	ND	0.0067	0.1407
	T4-VE1-S2EFF-13-06	Sec-2-Effluent	Air	3/11/02	0.0097	ND	ND	ND	0.0014	ND	ND	ND	ND	0.0058	ND	0.0017	0.0217
14	T4-VE1-A-14-01	Screen A	Air	3/19/02	0.0060	ND	ND	0.0074	0.0070	0.2540	0.0036	0.1900	0.0027	0.0630	0.0057	0.0066	0.5483
	T4-VE1-B-14-02	Screen B	Air	3/19/02	0.0036	ND	0.0430	0.0570	0.0660	0.1230	0.0110	0.2730	0.0480	0.0760	0.0180	0.0053	0.7240
	T4-VE1-C-14-03	Screen C	Air	3/19/02	0.0013	0.0016	0.1430	0.0300	0.0710	0.1070	0.0069	0.1740	0.1870	0.0860	0.0150	0.0021	0.8337
	T4-VE1-INN-14-04	Influent	Air	3/19/02	0.0039	ND	0.0760	0.0420	0.0600	0.1850	0.0095	0.2650	0.1210	0.0030	0.0340	0.0051	0.8142
	T4-VE1-EFF-14-05	Effluent	Air	3/19/02	0.0110	ND	0.0530	ND	0.0061	ND	ND	ND	ND	ND	ND	ND	0.0736
15	T4-VE1-INN-15-01	Influent	Air	3/25/02	0.0039	ND	0.0830	0.0460	0.0700	0.2010	0.0110	0.2830	0.1270	0.0012	0.0270	ND	0.8574
	T4-VE1-EFF-15-02	Effluent	Air	3/25/02	0.0093	ND	0.0670	ND	0.0170	ND	ND	ND	ND	ND	ND	ND	0.0947
16	T4-VE1-A-16-01	Screen A	Air	4/1/02	0.0063	ND	ND	0.0075	0.0077	0.2570	0.0033	0.1360	0.0040	0.0410	0.0028	0.0050	0.4727
	T4-VE1-B-16-02	Screen B	Air	4/1/02	0.0042	ND	0.0510	0.0730	0.0890	0.1510	0.0160	0.3520	0.0660	0.0640	0.0200	0.0073	0.8935
	T4-VE1-C-16-03	Screen C	Air	4/1/02	ND	ND	0.1270	0.0240	0.0700	0.0920	0.0055	0.1620	0.1490	0.0390	0.0110	0.0014	0.6824
	T4-VE1-INN-16-04	Influent	Air	4/1/02	0.0038	ND	0.0760	0.0430	0.0670	0.1880	0.0100	0.2600	0.1270	0.0027	0.0260	0.0041	0.8150
	T4-VE1-EFF-16-05	Effluent	Air	4/1/02	0.0062	ND	0.0940	ND	0.0410	ND	ND	ND	ND	ND	ND	ND	0.1434
17	T4-VE1-INN-17-01	Influent	Air	4/9/02	0.0038	ND	0.0760	0.0440	0.0650	0.1910	0.0110	0.2500	0.1300	0.0012	0.0260	ND	0.8039
	T4-VE1-EFF-17-02	Effluent	Air	4/9/02	0.0080	ND	0.1760	ND	0.1180	ND	ND	ND	ND	ND	ND	ND	0.3051
	T4-VE1-P1EFF-17-03	Pri-1-Effluent	Air	4/9/02	0.0047	ND	0.1320	0.0071	0.1280	0.0047	ND	0.0055	ND	0.0060	ND	0.0014	0.3084
	T4-VE1-P2EFF-17-04	Pri-2-Effluent	Air	4/9/02	0.0039	ND	0.1070	0.0190	0.1120	0.0180	0.0014	0.0220	ND	0.0097	ND	0.0010	0.2953
	T4-VE1-S1EFF-17-05	Sec-1-Effluent	Air	4/9/02	0.0052	ND	0.1340	ND	0.0950	ND	ND	ND	ND	0.0260	ND	0.0030	0.2865
	T4-VE1-S2EFF-17-06	Sec-2-Effluent	Air	4/9/02	0.0053	ND	0.1160	ND	0.0960	ND	ND	ND	ND	0.0034	ND	0.0012	0.2235
18	T4-VE1-A-18-01	Screen A	Air	4/15/02	0.0054	ND	0.0084	0.0110	0.0120	0.2270	0.0035	0.1130	0.0150	0.0230	0.0030	ND	0.4213
	T4-VE1-B-18-02	Screen B	Air	4/15/02	0.0048	ND	0.0410	0.0650	0.0750	0.1200	0.0160	0.2920	0.0520	0.0290	0.0160	ND	0.7108
	T4-VE1-C-18-03	Screen C	Air	4/15/02	0.0011	ND	0.1300	0.0260	0.0770	0.0990	0.0060	0.1770	0.1650	0.0180	0.0120	ND	0.7158
	T4-VE1-INN-18-04	Influent	Air	4/15/02	0.0040	ND	0.0710	0.0430	0.0650	0.1690	0.0110	0.2430	0.1210	ND	0.0230	ND	0.7535
	T4-VE1-EFF-18-05	Effluent	Air	4/15/02	0.0029	ND	0.0540	ND	0.0190	ND	ND	ND	ND	ND	ND	ND	0.0771
19	T4-VE1-INN-19-01	Influent	Air	4/22/02	0.0046	ND	0.0610	0.0360	0.0460	0.1320	0.0087	0.1990	0.1330	0.0021	0.0230	0.0017	0.6541
	T4-VE1-EFF-19-02	Effluent	Air	4/22/02	0.0089	ND	0.1620	ND	0.1140	ND	ND	ND	ND	ND	ND	ND	0.2891

**TABLE 3: SUMMARY OF LABORATORY ANALYTICAL RESULTS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA**

Week	Sample ID	Sample Location	Sample Matrix	Date Sampled	VOCs USING TO - 14 (ppmv)												
					Dichlorodifluoromethane	Chloroethane	Trichlorofluoromethane (Freon 11)	1,1-Dichloroethene (1,1-DCE)	1,1,2-C1,2,2,F ethane (Freon 113)	Chloroform	1,1,1-Trichloroethane (1,1,1-TCA)	Carbon Tetrachloride (CCl4)	Trichloroethylene (TCE)	Toluene	Tetrachloroethylene (PCE)	p,&m-Xylene	Total VOC
20	T4-VE1-A-20-01	Screen A	Air	4/29/02	0.0036	ND	0.0011	0.0054	0.0051	0.1660	0.0024	0.0870	0.0021	0.0260	0.0020	0.0014	0.3021
	T4-VE1-B-20-02	Screen B	Air	4/29/02	ND	ND	0.0250	0.0600	0.0590	0.1020	0.0140	0.2500	0.0720	0.0370	0.0160	0.0011	0.6381
	T4-VE1-C-20-03	Screen C	Air	4/29/02	ND	ND	0.1130	0.0200	0.0500	0.0710	0.0043	0.1320	0.1610	0.0210	0.0096	0.0015	0.5849
	T4-VE1-INN-20-04	Influent	Air	4/29/02	0.0037	ND	0.0620	0.0360	0.0460	0.1250	0.0086	0.1920	0.1350	0.0025	0.0210	ND	0.6374
	T4-VE1-EFF-20-05	Effluent	Air	4/29/02	0.0077	ND	0.1330	ND	0.0910	ND	ND	ND	ND	0.0017	ND	ND	0.2370
21	T4-VE1-INN-21-01	Influent	Air	5/6/02	0.0030	ND	0.0570	0.0330	0.0430	0.1190	0.0082	0.2010	0.1410	ND	0.0210	ND	0.6289
	T4-VE1-EFF-21-02	Effluent	Air	5/6/02	0.0044	ND	0.0680	ND	0.0360	ND	ND	ND	ND	0.0014	ND	ND	0.1134
	T4-VE1-P1EFF-21-03	Pri-1-Effluent	Air	5/6/02	0.0039	ND	0.0510	0.0160	0.0300	0.0260	0.0010	0.0260	ND	0.0037	ND	0.0012	0.1768
	T4-VE1-P2EFF-21-04	Pri-2-Effluent	Air	5/6/02	0.0038	ND	0.0710	0.0250	0.0280	0.0530	0.0023	0.0630	ND	0.0052	ND	ND	0.2522
	T4-VE1-S1EFF-21-05	Sec-1-Effluent	Air	5/6/02	0.0034	ND	0.0630	ND	0.0350	ND	ND	ND	ND	0.0076	ND	0.0016	0.1272
	T4-VE1-S2EFF-21-06	Sec-2-Effluent	Air	5/6/02	0.0040	ND	0.0550	ND	0.0340	ND	ND	ND	ND	0.0025	ND	ND	0.0955
22	T4-VE1-A-22-01	Screen A	Air	5/15/02	0.0049	0.0011	0.0012	0.0082	0.0050	0.1530	0.0023	0.0870	0.0028	0.0190	0.0017	ND	0.2851
	T4-VE1-B-22-02	Screen B	Air	5/15/02	0.0053	ND	0.0340	0.0600	0.0600	0.1040	0.0140	0.2860	0.0740	0.0300	0.0160	0.0057	0.6890
	T4-VE1-C-22-03	Screen C	Air	5/15/02	ND	0.0015	0.1040	0.0190	0.0480	0.0730	0.0042	0.1450	0.1900	0.0140	0.0120	0.0011	0.6179
	T4-VE1-INN-22-04	Influent	Air	5/15/02	0.0038	ND	0.0520	0.0350	0.0420	0.1340	0.0087	0.2050	0.1350	0.0013	0.0210	ND	0.6428
	T4-VE1-EFF-22-05	Effluent	Air	5/15/02	0.0052	ND	0.0930	ND	0.0520	ND	ND	ND	ND	ND	ND	ND	0.1528
23	T4-VE1-INN-23-01	Influent	Air	5/21/02	0.0040	ND	0.0530	0.0320	0.0350	0.1290	0.0083	0.1970	0.1240	0.0016	0.0180	ND	0.6066
	T4-VE1-EFF-23-02	Effluent	Air	5/21/02	0.0093	ND	0.1280	ND	0.0790	ND	ND	ND	ND	ND	ND	ND	0.2184
24	T4-VE1-A-24-01	Screen A	Air	5/28/02	0.0050	0.0016	0.0012	0.0066	0.0043	0.1250	0.0022	0.0720	0.0034	0.0240	0.0019	0.0019	0.2563
	T4-VE1-B-24-02	Screen B	Air	5/28/02	0.0050	ND	0.0320	0.0550	0.0540	0.0980	0.0130	0.2590	0.0680	0.0300	0.0180	0.0120	0.6650
	T4-VE1-C-24-03	Screen C	Air	5/28/02	ND	0.0012	0.0950	0.0170	0.0430	0.0680	0.0038	0.1250	0.1670	0.0190	0.0100	0.0018	0.5583
	T4-VE1-INN-24-04	Influent	Air	5/28/02	0.0034	ND	0.0460	0.0300	0.0370	0.1120	0.0078	0.1790	0.1160	0.0100	0.0180	0.0011	0.5715
	T4-VE1-EFF-24-05	Effluent	Air	5/28/02	0.0075	ND	0.0980	0.0011	0.0630	ND	ND	ND	ND	0.0014	ND	ND	0.1783
25	T4-VE1-INN-25-01	Influent	Air	6/3/02	0.0037	ND	0.0420	0.0280	0.0360	0.1120	0.0065	0.1630	0.1200	0.0059	0.0180	0.0017	0.5397
	T4-VE1-EFF-25-02	Effluent	Air	6/3/02	0.0053	ND	0.0250	ND	0.0064	ND	ND	ND	ND	ND	ND	0.0012	0.0958
26	T4-VE1-A-26-01	Screen A	Air	6/11/02	0.0045	ND	0.0140	0.0049	0.0041	0.0990	0.0019	0.0600	0.0026	0.0058	0.0017	0.0017	0.2012
	T4-VE1-B-26-02	Screen B	Air	6/11/02	0.0042	ND	0.0230	0.0430	0.0470	0.0760	0.0099	0.1960	0.0560	0.0160	0.0230	0.0180	0.5333
	T4-VE1-C-26-03	Screen C	Air	6/11/02	ND	ND	0.0840	0.0150	0.0430	0.0650	0.0036	0.1160	0.1590	0.0100	0.0086	0.0020	0.4825
	T4-VE1-INN-26-04	Influent	Air	6/11/02	0.0032	ND	0.0380	0.0250	0.0340	0.0950	0.0065	0.1530	0.1050	0.0037	0.0150	ND	0.4831
	T4-VE1-EFF-26-05	Effluent	Air	6/11/02	0.0029	ND	0.0430	0.0012	0.0180	ND	ND	ND	ND	0.0044	ND	ND	0.0729
27	T4-VE1-INN-27-01	Influent	Air	6/17/02	0.0034	ND	0.0420	0.0270	0.0340	0.1040	0.0072	0.1720	0.1280	0.0036	0.0180	ND	0.5456
	T4-VE1-EFF-27-02	Effluent	Air	6/17/02	0.0034	ND	0.0310	0.0016	0.0082	ND	ND	ND	ND	0.0041	ND	ND	0.0513

**TABLE 3: SUMMARY OF LABORATORY ANALYTICAL RESULTS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA**

Week	Sample ID	Sample Location	Sample Matrix	Date Sampled	VOCs USING TO - 14 (ppmv)												
					Dichlorodi-fluoromethane	Chloroethane	Trichlorofluoro-methane (Freon 11)	1,1-Dichloroethene (1,1-DCE)	1,1,2-C1,2,2,F ethane (Freon 113)	Chloroform	1,1,1-Trichloroethane (1,1,1-TCA)	Carbon Tetrachloride (CCl4)	Trichloroethene (TCE)	Toluene	Tetrachloro-ethene (PCE)	p,&m-Xylene	Total VOC
28	T4-VE1-INN-28-01	Influent	Air	6/24/02	0.0038	ND	0.0450	0.0380	0.0380	0.1250	0.0080	0.1790	0.1610	0.0070	0.0250	ND	0.6390
	T4-VE1-EFF-28-02	Effluent	Air	6/24/02	0.0042	ND	0.0510	0.0025	0.0200	ND	ND	ND	ND	0.0035	ND	ND	0.0934

Explanation:

VOCs: Volatile Organic Compounds

Freon 113:1,1,2-Trichlorotrifluoroethane (FR113)

Freon 11: Trichlorofluoromethane (FR11)

CCl₄:Carbon Tetrachloride

1,1-DCE: 1,1-Dichloroethene

1,1,1-TCA: 1,1,1-Trichloroethene

TCE:Trichloroethene

PCE:Tetrachloroethene

Screen B + C: Influent Sample Location

ND: Not Detected above the laboratory Method Detection Limit (MDL)

TABLE 4: INFLUENT AND EFFLUENT EMISSION RATES CALCULATIONS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA

INFLUENT				
Compound	Laboratory Results (ppmv)	Flow Rate (scfm)	Molecular Weight	Removal Rate (lbs/day)
12/18/01 (Week 1)				
Freon 113	0.03	336	187	0.0069
CCl ₄	0.175	336	154	0.0344
TCE	0.098	336	131.5	0.0165
PCE	0.01	336	166	0.0017
Total VOCs	0.61	336	86	0.0667
12/19/01 (Week 1)				
Freon 113	0.043	356	187	0.0109
CCl ₄	0.215	356	154	0.0448
TCE	0.112	356	131.5	0.0199
PCE	0.01	356	166	0.0029
Total VOCs	0.624	356	86	0.0725
12/20/01 (Week 1)				
Freon 113	0.047	473	187	0.0158
CCl ₄	0.249	473	154	0.0689
TCE	0.135	473	131.5	0.0319
PCE	0.019	473	166	0.0057
Total VOCs	0.699	473	86	0.1081
12/21/01 (Week 1)				
Freon 113	0.051	399	187	0.0145
CCl ₄	0.281	399	154	0.0656
TCE	0.134	399	131.5	0.0267
PCE	0.027	399	166	0.0068
Total VOCs	0.733	399	86	0.0956

EFFLUENT					
Compound	Laboratory Results (ppmv)	Flow Rate (scfm)	Molecular Weight	Removal Rate (lbs/day)	Destruction Efficiency (%)
12/18/01 (Week 1)					
Freon 113	0	336	187	0.0000	100.00
CCl ₄	0	336	154	0.0000	100.00
TCE	0	336	131.5	0.0000	100.00
PCE	0	336	166	0.0000	100.00
Total VOC	0.0182	336	86	0.0020	97.00
12/19/01 (Week 1)					
Freon 113	0.0024	356	187	0.0006	94.42
CCl ₄	0	356	154	0.0000	100.00
TCE	0	356	131.5	0.0000	100.00
PCE	0	356	166	0.0000	100.00
Total VOC	0.0315	356	86	0.0037	94.95
12/20/01 (Week 1)					
Freon 113	0.0033	473	187	0.0011	92.98
CCl ₄	0	473	154	0.0000	100.00
TCE	0	473	131.5	0.0000	100.00
PCE	0	473	166	0.0000	100.00
Total VOC	0.0336	473	86	0.0052	95.20
12/21/01 (Week 1)					
Freon 113	0.005	399	187	0.0014	90.20
CCl ₄	0	399	154	0.0000	100.00
TCE	0	399	131.5	0.0000	100.00
PCE	0	399	166	0.0000	100.00
Total VOC	0.0374	399	86	0.0049	94.90

TABLE 4: INFLUENT AND EFFLUENT EMISSION RATES CALCULATIONS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA

INFLUENT				
Compound	Laboratory Results (ppmv)	Flow Rate (scfm)	Molecular Weight	Removal Rate (lbs/day)
12/24/01 (Week 2)				
Freon 113	0.009	335	187	0.0021
CCl ₄	0.184	335	154	0.0361
TCE	0.015	335	131.5	0.0025
PCE	0.003	335	166	0.0007
Total VOCs	0.529	335	86	0.0579
12/26/01 (Week 2)				
Freon 113	0.057	352	187	0.0143
CCl ₄	0.271	352	154	0.0558
TCE	0.070	352	131.5	0.0123
PCE	0.013	352	166	0.0029
Total VOCs	0.775	352	86	0.0891
12/27/01 (Week 2)				
Freon 113	0.071	394	187	0.0199
CCl ₄	0.313	394	154	0.0722
TCE	0.073	394	131.5	0.0144
PCE	0.018	394	166	0.0045
Total VOCs	0.803	394	86	0.1034
12/28/01 (Week 2)				
Freon 113	0.079	469	187	0.0263
CCl ₄	0.353	469	154	0.0969
TCE	0.085	469	131.5	0.0199
PCE	0.017	469	166	0.0050
Total VOCs	0.915	469	86	0.1403

EFFLUENT					
Compound	Laboratory Results (ppmv)	Flow Rate (scfm)	Molecular Weight	Removal Rate (lbs/day)	Destruction Efficiency (%)
12/24/01 (Week 2)					
Freon 113	0.066	335	187	0.0157	641.57
CCl ₄	0	335	154	0.0000	100.00
TCE	0	335	131.5	0.0000	100.00
PCE	0	335	166	0.0000	100.00
Total VOC	0.1698	335	86	0.0186	67.93
12/26/01 (Week 2)					
Freon 113	0.153	352	187	0.0383	168.42
CCl ₄	0	352	154	0.0000	100.00
TCE	0	352	131.5	0.0000	100.00
PCE	0	352	166	0.0000	100.00
Total VOC	0.3116	352	86	0.0358	59.78
12/27/01 (Week 2)					
Freon 113	0.182	394	187	0.0509	156.34
CCl ₄	0	394	154	0.0000	100.00
TCE	0	394	131.5	0.0000	100.00
PCE	0	394	166	0.0000	100.00
Total VOC	0.3512	394	86	0.0452	56.29
12/28/01 (Week 2)					
Freon 113	0.211	469	187	0.0703	167.09
CCl ₄	0	469	154	0.0000	100.00
TCE	0	469	131.5	0.0000	100.00
PCE	0	469	166	0.0000	100.00
Total VOC	0.3569	469	86	0.0547	61.01

TABLE 4: INFLUENT AND EFFLUENT EMISSION RATES CALCULATIONS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA

INFLUENT				
Compound	Laboratory Results (ppmv)	Flow Rate (scfm)	Molecular Weight	Removal Rate (lbs/day)
12/31/01 (Week 3)				
Freon 113	0.016	243	187	0.0028
CCl ₄	0.676	243	154	0.0961
TCE	0.007	243	131.5	0.0008
PCE	0.018	243	166	0.0028
Total VOCs	1.141	243	86	0.0906
1/2/02 (Week 3)				
Freon 113	0.014	475	187	0.0047
CCl ₄	0.592	475	154	0.1645
TCE	0.0065	475	131.5	0.0015
PCE	0.0085	475	166	0.0025
Total VOCs	1.015	475	86	0.1575
1/3/02 (Week 3)				
Freon 113	0.014	425	187	0.0042
CCl ₄	0.526	425	154	0.1308
TCE	0.007	425	131.5	0.0015
PCE	0.0092	425	166	0.0025
Total VOCs	0.9873	425	86	0.1371
1/7/02 (Week 4)				
Freon 113	0.056	365	187	0.0145
CCl ₄	0.293	365	154	0.0626
TCE	0.147	365	131.5	0.0268
PCE	0.019	365	166	0.0044
Total VOCs	0.7776	365	86	0.0927

EFFLUENT					
Compound	Laboratory Results (ppmv)	Flow Rate (scfm)	Molecular Weight	Removal Rate (lbs/day)	Destruction Efficiency (%)
12/31/01 (Week 3)					
Freon 113	0.24	243	187	0.0414	1400.00
CCl ₄	0	243	154	0.0000	100.00
TCE	0	243	131.5	0.0000	100.00
PCE	0	243	166	0.0000	100.00
Total VOC	0.4218	243	86	0.0335	63.02
1/2/02 (Week 3)					
Freon 113	0.212	475	187	0.0715	1414.29
CCl ₄	0	475	154	0.0000	100.00
TCE	0	475	131.5	0.0000	100.00
PCE	0	475	166	0.0000	100.00
Total VOC	0.3743	475	86	0.0581	63.12
1/3/02 (Week 3)					
Freon 113	0.192	425	187	0.0580	1271.43
CCl ₄	0	425	154	0.0000	100.00
TCE	0	425	131.5	0.0000	100.00
PCE	0	425	166	0.0000	100.00
Total VOC	0.337	425	86	0.0468	65.87
1/7/02 (Week 4)					
Freon 113	0.426	365	187	0.1105	660.71
CCl ₄	0	365	154	0.0000	100.00
TCE	0	365	131.5	0.0000	100.00
PCE	0	365	166	0.0000	100.00
Total VOC	0.6813	365	86	0.0813	12.38

TABLE 4: INFLUENT AND EFFLUENT EMISSION RATES CALCULATIONS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA

INFLUENT				
Compound	Laboratory Results (ppmv)	Flow Rate (scfm)	Molecular Weight	Removal Rate (lbs/day)
1/14/02 (Week 5)				
Freon 113	0.084	335	187	0.0200
CCl ₄	0.463	335	154	0.0908
TCE	0.1660	335	131.5	0.0278
PCE	0.0290	335	166	0.0061
Total VOCs	1.0732	335	86	0.1175
1/21/02 (Week 6)				
Freon 113	0.080	350	187	0.0199
CCl ₄	0.492	350	154	0.1008
TCE	0.1610	350	131.5	0.0282
PCE	0.0350	350	166	0.0077
Total VOCs	1.0698	350	86	0.1223
1/28/02 (Week 7)				
Freon 113	0.071	300	187	0.0151
CCl ₄	0.432	300	154	0.0758
TCE	0.132	300	131.5	0.0198
PCE	0.035	300	166	0.0066
Total VOCs	0.9835	300	86	0.0964
2/4/02 (Week 8)				
Freon 113	0.081	420	187	0.0242
CCl ₄	0.587	420	154	0.1443
TCE	0.161	420	131.5	0.0338
PCE	0.045	420	166	0.0119
Total VOCs	1.229	420	86	0.1687

EFFLUENT					
Compound	Laboratory Results (ppmv)	Flow Rate (scfm)	Molecular Weight	Removal Rate (lbs/day)	Destruction Efficiency (%)
1/14/2002 (Week 5)					
Freon 113	0.149	335	187	0.0355	77.38
CCl ₄	0	335	154	0.0000	100.00
TCE	0	335	131.5	0.0000	100.00
PCE	0	335	166	0.0000	100.00
Total VOC	0.2526	335	86	0.0277	76.46
1/21/2002 (Week 6)					
Freon 113	0.25	350	187	0.0622	212.50
CCl ₄	0	350	154	0.0000	100.00
TCE	0	350	131.5	0.0000	100.00
PCE	0	350	166	0.0000	100.00
Total VOC	0.3935	350	86	0.0450	63.22
1/28/02 (Week 7)					
Freon 113	0.135	300	187	0.0288	90.14
CCl ₄	0.0055	300	154	0.0010	98.73
TCE	0	300	131.5	0.0000	100.00
PCE	0	300	166	0.0000	100.00
Total VOC	0.2348	300	86	0.0230	76.13
2/4/02 (Week 8)					
Freon 113	0.233	420	187	0.0695	187.65
CCl ₄	0.065	420	154	0.0160	88.93
TCE	0	420	131.5	0.0000	100.00
PCE	0	420	166	0.0000	100.00
Total VOC	0.524	420	86	0.0719	57.36

TABLE 4: INFLUENT AND EFFLUENT EMISSION RATES CALCULATIONS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA

INFLUENT				
Compound	Laboratory Results (ppmv)	Flow Rate (scfm)	Molecular Weight	Removal Rate (lbs/day)
2/21/02 (Week 10)				
Freon 113	0.073	410	187	0.0213
CCl ₄	0.504	410	154	0.1209
TCE	0.1390	410	131.5	0.0285
PCE	0.0330	410	166	0.0085
Total VOCs	1.0989	410	86	0.1472
2/26/02 (Week 11)				
Freon 113	0.074	410	187	0.0216
CCl ₄	0.453	410	154	0.1087
TCE	0.1260	410	131.5	0.0258
PCE	0.0310	410	166	0.0080
Total VOCs	1.0512	410	86	0.1408
3/4/02 (Week 12)				
Freon 113	0.063	420	187	0.0188
CCl ₄	0.349	420	154	0.0858
TCE	0.1190	420	131.5	0.0250
PCE	0.0290	420	166	0.0077
Total VOCs	0.8860	420	86	0.1216
3/11/02 (Week 13)				
Freon 113	0.066	430	187	0.0202
CCl ₄	0.307	430	154	0.0772
TCE	0.1330	430	131.5	0.0286
PCE	0.0320	430	166	0.0087
Total VOCs	0.9021	430	86	0.1267

EFFLUENT					
Compound	Laboratory Results (ppmv)	Flow Rate (scfm)	Molecular Weight	Removal Rate (lbs/day)	Destruction Efficiency (%)
2/21/02 (Week 10)					
Freon 113	0	410	187	0.0000	100.00
CCl ₄	0	410	154	0.0000	100.00
TCE	0	410	131.5	0.0000	100.00
PCE	0	410	166	0.0000	100.00
Total VOC	0.0029	410	86	0.0004	99.74
2/26/02 (Week 11)					
Freon 113	0	410	187	0.0000	100.00
CCl ₄	0	410	154	0.0000	100.00
TCE	0	410	131.5	0.0000	100.00
PCE	0	410	166	0.0000	100.00
Total VOC	0	410	86	0.0000	100.00
3/4/02 (Week 12)					
Freon 113	0	420	187	0.0000	100.00
CCl ₄	0	420	154	0.0000	100.00
TCE	0	420	131.5	0.0000	100.00
PCE	0	420	166	0.0000	100.00
Total VOC	0	420	86	0.0000	100.00
3/11/02 (Week 13)					
Freon 113	0	430	187	0.0000	100.00
CCl ₄	0	430	154	0.0000	100.00
TCE	0	430	131.5	0.0000	100.00
PCE	0	430	166	0.0000	100.00
Total VOC	0.016	430	86	0.0022	98.23

TABLE 4: INFLUENT AND EFFLUENT EMISSION RATES CALCULATIONS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA

INFLUENT				
Compound	Laboratory Results (ppmv)	Flow Rate (scfm)	Molecular Weight	Removal Rate (lbs/day)
3/19/02 (Week 14)				
Freon 113	0.060	475	187	0.0202
CCl ₄	0.265	475	154	0.0737
TCE	0.1210	475	131.5	0.0287
PCE	0.0340	475	166	0.0102
Total VOCs	0.8142	475	86	0.1264
3/25/02 (Week 15)				
Freon 113	0.070	460	187	0.0229
CCl ₄	0.283	460	154	0.0762
TCE	0.1270	460	131.5	0.0292
PCE	0.0270	460	166	0.0078
Total VOCs	0.8574	460	86	0.1289
4/1/02 (Week 16)				
Freon 113	0.067	400	187	0.0190
CCl ₄	0.260	400	154	0.0609
TCE	0.1270	400	131.5	0.0254
PCE	0.0260	400	166	0.0066
Total VOCs	0.8150	400	86	0.1065
4/9/02 (Week 17)				
Freon 113	0.065	440	187	0.0203
CCl ₄	0.250	440	154	0.0644
TCE	0.1300	440	131.5	0.0286
PCE	0.0260	440	166	0.0072
Total VOCs	0.8039	440	86	0.1156

EFFLUENT					
Compound	Laboratory Results (ppmv)	Flow Rate (scfm)	Molecular Weight	Removal Rate (lbs/day)	Destruction Efficiency (%)
3/19/02 (Week 14)					
Freon 113	0.0061	475	187	0.0021	89.83
CCl ₄	0	475	154	0.0000	100.00
TCE	0	475	131.5	0.0000	100.00
PCE	0	475	166	0.0000	100.00
Total VOC	0.0736	475	86	0.0114	90.96
3/25/02 (Week 15)					
Freon 113	0.017	460	187	0.0056	75.71
CCl ₄	0	460	154	0.0000	100.00
TCE	0	460	131.5	0.0000	100.00
PCE	0	460	166	0.0000	100.00
Total VOC	0.0947	460	86	0.0142	88.95
4/1/02 (Week 16)					
Freon 113	0.041	400	187	0.0117	38.81
CCl ₄	0	400	154	0.0000	100.00
TCE	0	400	131.5	0.0000	100.00
PCE	0	400	166	0.0000	100.00
Total VOC	0.143	400	86	0.0187	82.45
4/9/02 (Week 17)					
Freon 113	0.118	440	187	0.0369	81.54
CCl ₄	0	440	154	0.0000	100.00
TCE	0	440	131.5	0.0000	100.00
PCE	0	440	166	0.0000	100.00
Total VOC	0.3051	440	86	0.0439	62.05

TABLE 4: INFLUENT AND EFFLUENT EMISSION RATES CALCULATIONS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA

INFLUENT				
Compound	Laboratory Results (ppmv)	Flow Rate (scfm)	Molecular Weight	Removal Rate (lbs/day)
4/15/02 (Week 18)				
Freon 113	0.065	340	187	0.0157
CCl ₄	0.243	340	154	0.0483
TCE	0.1210	340	131.5	0.0206
PCE	0.0230	340	166	0.0049
Total VOCs	0.7535	340	86	0.0837
4/22/02 (Week 19)				
Freon 113	0.046	440	187	0.0144
CCl ₄	0.199	440	154	0.0512
TCE	0.1330	440	131.5	0.0292
PCE	0.0230	440	166	0.0064
Total VOCs	0.6541	440	86	0.0940
4/29/02 (Week 20)				
Freon 113	0.046	440	187	0.0144
CCl ₄	0.192	440	154	0.0494
TCE	0.1350	440	131.5	0.0297
PCE	0.0210	440	166	0.0058
Total VOCs	0.6374	440	86	0.0916
5/6/02 (Week 21)				
Freon 113	0.043	325	187	0.0099
CCl ₄	0.201	325	154	0.0382
TCE	0.1410	325	131.5	0.0229
PCE	0.0210	325	166	0.0043
Total VOCs	0.6289	325	86	0.0668

EFFLUENT					
Compound	Laboratory Results (ppmv)	Flow Rate (scfm)	Molecular Weight	Removal Rate (lbs/day)	Destruction Efficiency (%)
4/15/02 (Week 18)					
Freon 113	0.019	340	187	0.0046	70.77
CCl ₄	0	340	154	0.0000	100.00
TCE	0	340	131.5	0.0000	100.00
PCE	0	340	166	0.0000	100.00
Total VOC	0.0771	340	86	0.0086	89.77
4/22/02 (Week 19)					
Freon 113	0.114	440	187	0.0356	147.83
CCl ₄	0	440	154	0.0000	100.00
TCE	0	440	131.5	0.0000	100.00
PCE	0	440	166	0.0000	100.00
Total VOC	0.2891	440	86	0.0416	55.80
4/29/02 (Week 20)					
Freon 113	0.091	440	187	0.0284	97.83
CCl ₄	0	440	154	0.0000	100.00
TCE	0	440	131.5	0.0000	100.00
PCE	0	440	166	0.0000	100.00
Total VOC	0.237	440	86	0.0341	62.82
5/6/02 (Week 21)					
Freon 113	0.036	325	187	0.0083	16.28
CCl ₄	0	325	154	0.0000	100.00
TCE	0	325	131.5	0.0000	100.00
PCE	0	325	166	0.0000	100.00
Total VOC	0.1134	325	86	0.0120	81.97

TABLE 4: INFLUENT AND EFFLUENT EMISSION RATES CALCULATIONS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA

INFLUENT				
Compound	Laboratory Results (ppmv)	Flow Rate (scfm)	Molecular Weight	Removal Rate (lbs/day)
5/15/02 (Week 22)				
Freon 113	0.042	440	187	0.0131
CCl ₄	0.205	440	154	0.0528
TCE	0.1350	440	131.5	0.0297
PCE	0.0210	440	166	0.0058
Total VOCs	0.6428	440	86	0.0924
5/21/02 (Week 23)				
Freon 113	0.035	465	187	0.0116
CCl ₄	0.197	465	154	0.0536
TCE	0.1240	465	131.5	0.0288
PCE	0.0180	465	166	0.0053
Total VOCs	0.6066	465	86	0.0922
5/28/02 (Week 24)				
Freon 113	0.037	480	187	0.0126
CCl ₄	0.179	480	154	0.0503
TCE	0.1160	480	131.5	0.0278
PCE	0.0180	480	166	0.0054
Total VOCs	0.5715	480	86	0.0896
6/3/02 (Week 25)				
Freon 113	0.036	450	187	0.0115
CCl ₄	0.163	450	154	0.0429
TCE	0.1200	450	131.5	0.0270
PCE	0.0180	450	166	0.0051
Total VOCs	0.5397	450	86	0.0794

EFFLUENT					
Compound	Laboratory Results (ppmv)	Flow Rate (scfm)	Molecular Weight	Removal Rate (lbs/day)	Destruction Efficiency (%)
5/15/02 (Week 22)					
Freon 113	0.052	440	187	0.0163	23.81
CCl ₄	0	440	154	0.0000	100.00
TCE	0	440	131.5	0.0000	100.00
PCE	0	440	166	0.0000	100.00
Total VOC	0.1528	440	86	0.0220	76.23
5/21/02 (Week 23)					
Freon 113	0.079	465	187	0.0261	125.71
CCl ₄	0	465	154	0.0000	100.00
TCE	0	465	131.5	0.0000	100.00
PCE	0	465	166	0.0000	100.00
Total VOC	0.2184	465	86	0.0332	64.00
5/28/02 (Week 24)					
Freon 113	0.063	480	187	0.0215	70.27
CCl ₄	0	480	154	0.0000	100.00
TCE	0	480	131.5	0.0000	100.00
PCE	0	480	166	0.0000	100.00
Total VOC	0.1783	480	86	0.0280	68.80
6/3/02 (Week 25)					
Freon 113	0.064	450	187	0.0205	77.78
CCl ₄	0	450	154	0.0000	100.00
TCE	0	450	131.5	0.0000	100.00
PCE	0	450	166	0.0000	100.00
Total VOC	0.0958	450	86	0.0141	82.25

TABLE 4: INFLUENT AND EFFLUENT EMISSION RATES CALCULATIONS
SOIL VAPOR EXTRACTION PILOT TEST AT OPERABLE UNIT 2 (LOCATION #1)
NASA JET PROPULSION LABORATORY, PASADENA, CALIFORNIA

INFLUENT				
Compound	Laboratory Results (ppmv)	Flow Rate (scfm)	Molecular Weight	Removal Rate (lbs/day)
6/11/02 (Week 26)				
Freon 113	0.034	410	187	0.0099
CCl ₄	0.153	410	154	0.0367
TCE	0.1050	410	131.5	0.0215
PCE	0.0150	410	166	0.0039
Total VOCs	0.4831	410	86	0.0647
6/17/02 (Week 27)				
Freon 113	0.034	480	187	0.0116
CCl ₄	0.172	480	154	0.0483
TCE	0.1280	480	131.5	0.0307
PCE	0.0180	480	166	0.0054
Total VOCs	0.5456	480	86	0.0856
6/24/02 (Week 28)				
Freon 113	0.038	460	187	0.0124
CCl ₄	0.179	460	154	0.0482
TCE	0.1610	460	131.5	0.0370
PCE	0.0250	460	166	0.0073
Total VOCs	0.6390	460	86	0.0960

EFFLUENT					
Compound	Laboratory Results (ppmv)	Flow Rate (scfm)	Molecular Weight	Removal Rate (lbs/day)	Destruction Efficiency (%)
6/11/02 (Week 26)					
Freon 113	0.018	410	187	0.0052	47.06
CCl ₄	0	410	154	0.0000	100.00
TCE	0	410	131.5	0.0000	100.00
PCE	0	410	166	0.0000	100.00
Total VOC	0.0729	410	86	0.0098	84.91
6/17/02 (Week 27)					
Freon 113	0.0082	480	187	0.0028	75.88
CCl ₄	0	480	154	0.0000	100.00
TCE	0	480	131.5	0.0000	100.00
PCE	0	480	166	0.0000	100.00
Total VOC	0.0513	480	86	0.0080	90.60
6/24/02 (Week 28)					
Freon 113	0.002	460	187	0.0007	94.74
CCl ₄	0	460	154	0.0000	100.00
TCE	0	460	131.5	0.0000	100.00
PCE	0	460	166	0.0000	100.00
Total VOC	0.0632	460	86	0.0095	90.11

Explanation:

CCl₄: Carbon Tetrachloride

Freon 113: 1,1,2-Trichlorotrifluoroethane (FR113)

lb/day: Pounds per Day

PCE: Tetrachloroethene

ppmv: parts per million by volume

scfm: Standard Cubic Feet per Minute

TCE: Trichloroethene

VOCs: Volatile Organic Compounds